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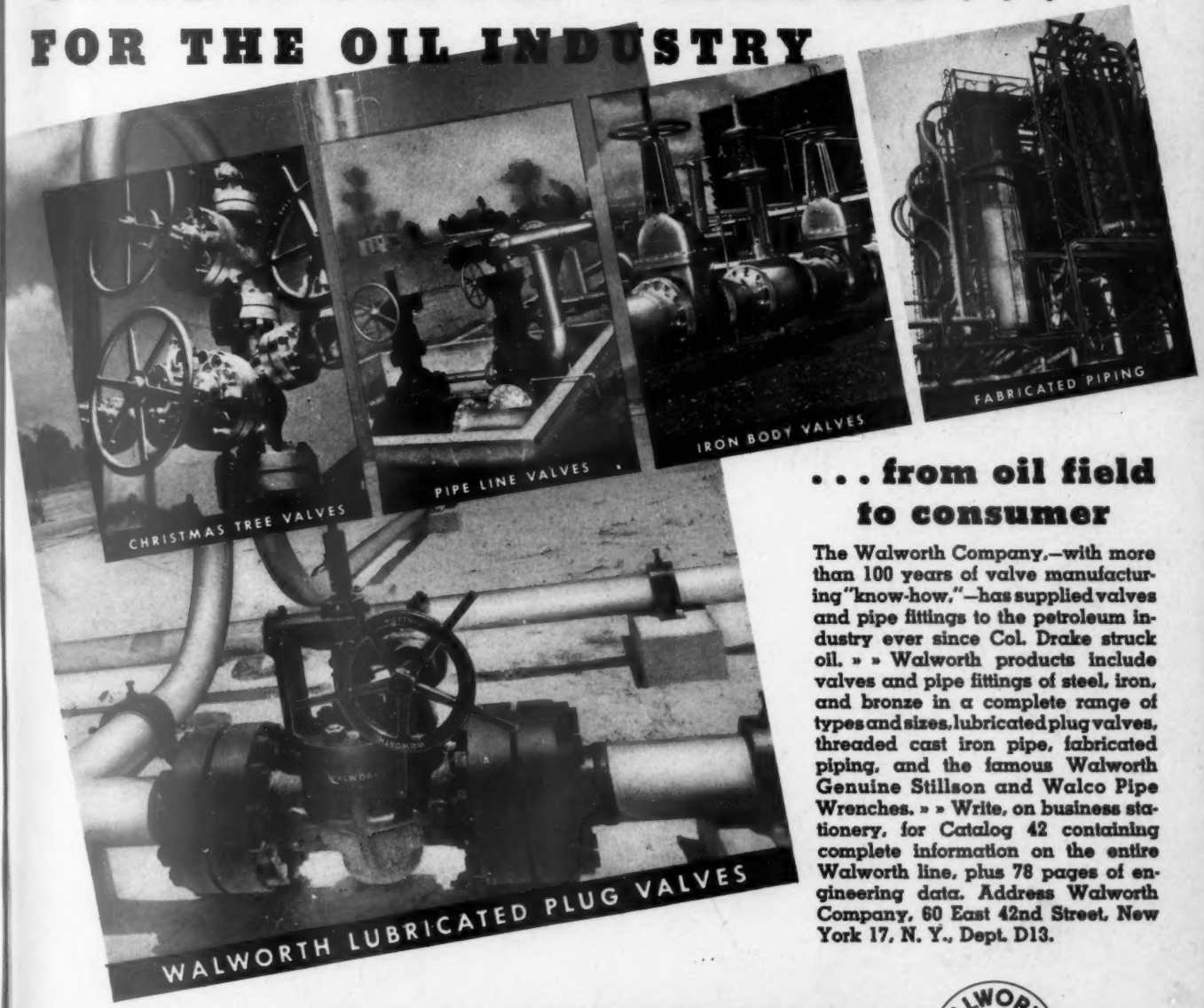

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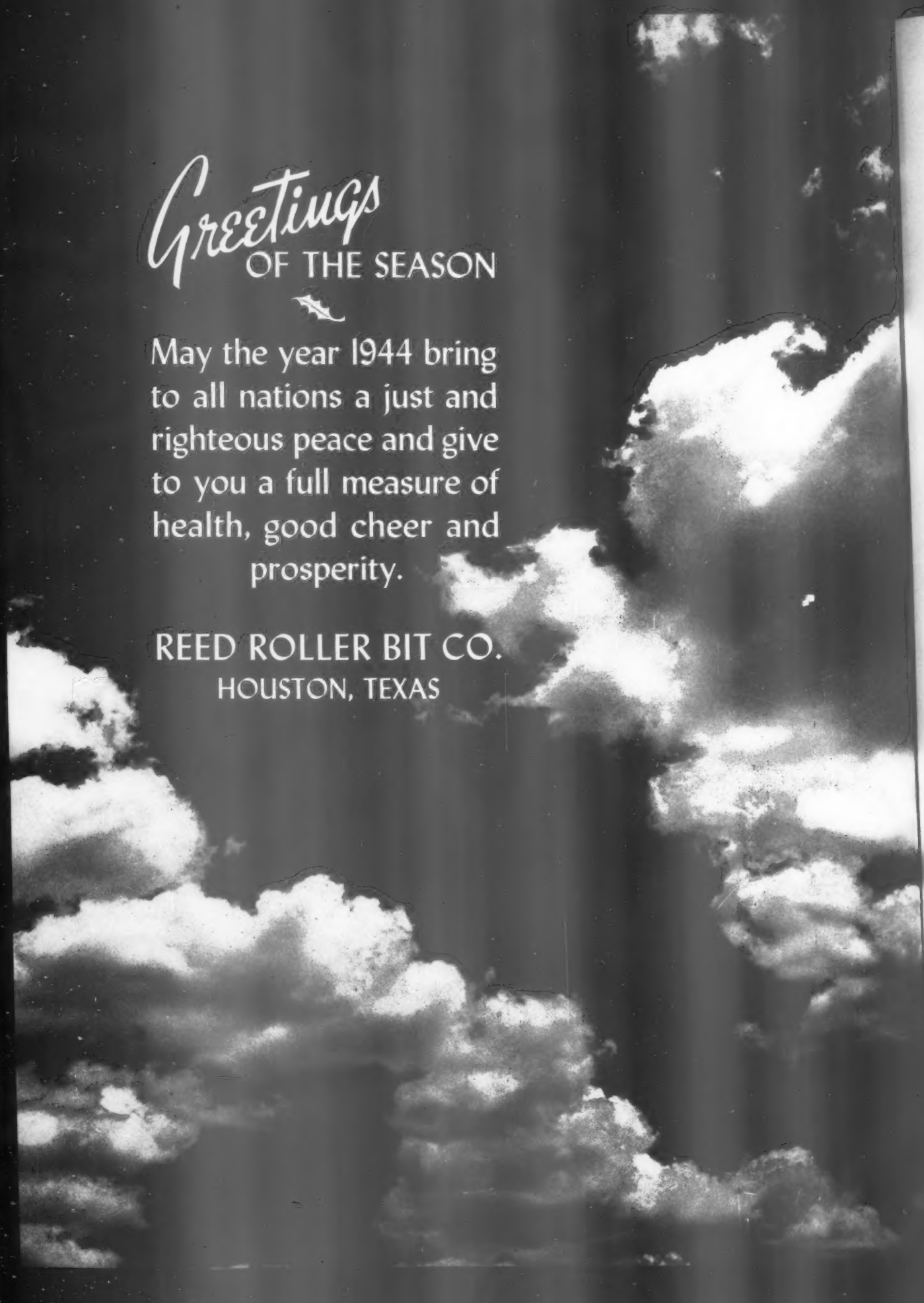
Greetings
OF THE SEASON
May the year 1944 bring to all nations a just and righteous peace and give to you a full measure of health, good cheer and prosperity.
REED ROLLER BIT CO.
HOUSTON, TEXAS

the OIL AND GAS JOURNAL

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Table of Contents

NEWS DEVELOPMENTS

Army Estimates Norman Wells Reserves at 100,000,000 Bbl. ... 12
Senate Action on Disney Bill Unlikely Until After Holidays ... 13
Automotive Gasoline Quota Reduced to 1,117,000 Bbl. ... 14
Liquefied Petroleum Gas Demand Rises 19 Per Cent ... 16
Consolidated Natural Gas Co. Unites Jersey Subsidiaries ... 20
Increase of 12,950 Bbl. in Production Quota Centered on Coast ... 22
Mexico's Crude-Oil Production Climbs ... 24
House Oil Committee Proposes Hearing on Competition Trend ... 25

Trends ... 11
This Week ... 15
Editorial ... 19
Deaths ... 25
Refining News ... 67
Pipe-Line News ... 70
Natural-Gas News ... 73
Natural-Gasoline News ... 73

ENGINEERING-OPERATING

Mud Control for Deeper Drilling in Rocky Mountain District ... 29
New Test Engine Shows Great Flexibility ... 39
Fractionator Built Partly From Scrap Steel in Gulf Shop ... 43
Still Preheater Control, Boiler Feed-Water Heaters Combined ... 44
Foundation and Housing for Unitized Generator Sets ... 43
Front Lines in Refining ... 49
Rate-of-Flow Chart Devised for Natural-Gas Pipe Lines ... 52
Cleaning Program for Used Equipment Boosts Plant Efficiency ... 53

Plant Practices ... 36
Operating Ideas ... 50
Cost Engineering ... 59
Journalog ... 61
Eng. Fundamentals ... 63
Questions on Technology ... 64

EXPLORATION AND DRILLING

Week's Highlights ... 75
Completions in All Fields ... 75
Daily Average Production for Week ... 76
Reports by Areas Start on Page ... 76
Monthly Wildcat Completion Record ... 78
Weekly Wildcat Completions and Discoveries ... 91

ADDITIONAL FEATURES

Crude Prices ... 88
Drilling Contractors ... 92
Personals ... 94
Market Developments ... 96
Refinery Prices ... 97
Equipment Progress ... 98
Classified Advertising ... 100
Calendar of Events ... 104
Journalisms ... 104
Advertisers' Index ... 104

Christmas Gift To a Boy Overseas

Here is a gift from all of us, marked "Made in the U.S.A." It's wrapped with good wishes, and tied with the bonds of real appreciation for the job you are doing.

It's a pledge to do everything in our power to bring you home by next Christmas — a promise to buy bonds willingly, and work uncomplainingly, in the knowledge that our effort is nothing compared to the sacrifices you are making.

Best of luck, buddy. We're praying and working to see you in the not-too-distant future . . .

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GASO PUMPS

FOR EVERY OIL INDUSTRY NEED

the OIL AND GAS JOURNAL

Trends

Crude-Oil Production
By States — Page 76

CRUDE-OIL STOCKS 240,148,000 bbl. as of Dec. 11—down 1,017,000 bbl. One year ago 231,896,000 bbl.

GASOLINE STOCKS 71,937,000 bbl. as of Dec. 11—up 897,000 bbl. One year ago 74,093,000 bbl.

RESIDUAL FUEL-OIL STOCKS* 59,715,000 bbl. as of Dec. 11—down 1,705,000. One year ago 75,287,000.

GAS OIL AND DISTILLATE* 45,510,000 as of Dec. 11—up 403,000 bbl. One year ago 48,749,000.

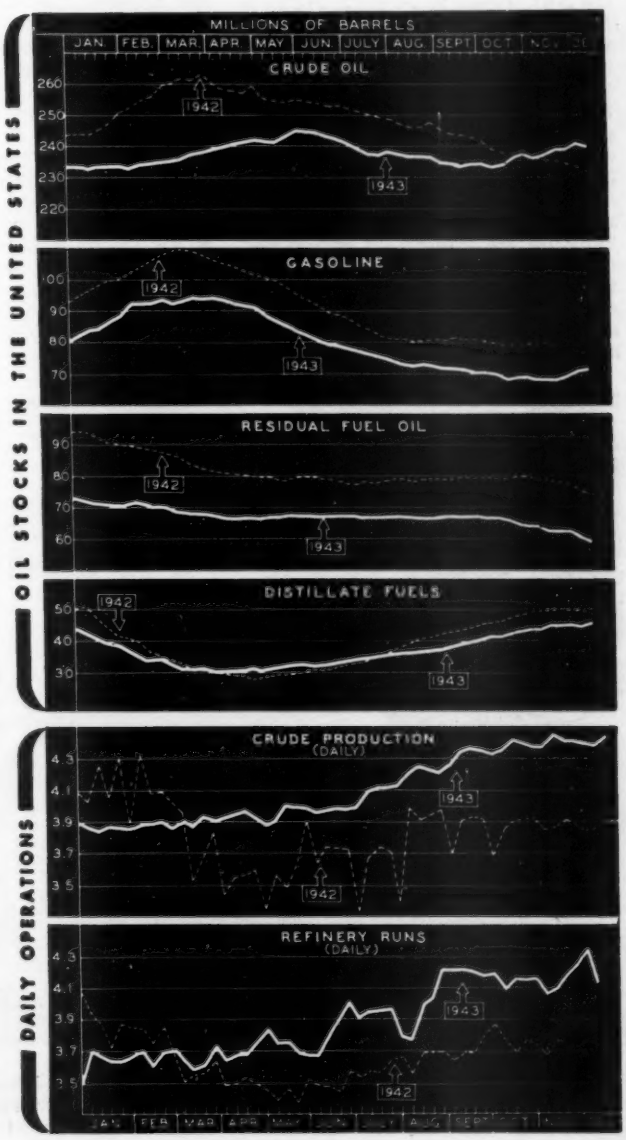
CRUDE-OIL PRODUCTION 4,401,290 bbl. daily average—up 29,420 bbl. One year ago 3,909,750.

REFINER RUNS 4,144,000 bbl. daily week ended Dec. 11—down 187,000 bbl. One year ago 3,717,000.
*Last week revised.

THE Pennsylvania Grade area is one of the sections of the country which, according to those most familiar with conditions, must have special consideration in early 1944 if a most critical situation is to be avoided. Due to the fact that the field and refinery output in that area is comparatively small the petroleum industry generally and the Washington agencies are inclined to ignore conditions in this oldest oil country. Because of the premium-grade lubricants which are widely used by the military and by war industries and because of the manufacture of other products in an area where local demands far exceed production, what happens to Pennsylvania Grade operations, is in fact, of national importance.

THE production data clearly reveal what has happened. The output of Pennsylvania Grade crude oils at the close of 1941 totaled 83,000 bbl. daily. A year later this production had declined to 73,000 bbl. daily and the output now is approximately 65,000 bbl. daily. There are no indications that this decline will stop. In fact it is known that projections for 1944 point to another decline of around 10,000 bbl. daily assuming that prices for crude oil and products are unchanged. It is pointed out in this connection that no outside supplies can be brought in to remedy this situation because there is no crude comparable in refining characteristics to the Pennsylvania Grade crude oil. Most refiners in the area do not have the plant facilities to refine any other grade of crude oil and those that do, can only refine the imported crudes in the production of gasoline, distillates, fuel oils and associated products.

THE reasons for the decline in producing and refining operations are apparent from the data on field operations. In November 1941 a total of 419 oil-well completions were reported in the Appalachian area. By November 1942 these oil operations had decreased to 204 and last month a total of 170 oil wells were reported. The footage for all drilling in the Appalachian area (oil, natural gas and dry holes) in November 1941 totaled 1,198,514 ft. which compares with the 521,125-ft. total for November this year. It has been pointed many times at Washington by representative operators that substantial advances in posted crude-oil schedules with changes in governmental policies which will relieve the material and manpower shortages in that area, offer the only solution to this problem.



Army Estimates Norman Wells Field Crude-Oil Reserves at 100,000,000 Bbl.

by Henry D. Ralph

WASHINGTON, D. C.—The Canol project should unquestionably be continued and the War Department soon may ask authority to expand it, the Truman committee of the Senate was told Monday by Lt. Gen. Brehon B. Somervell, chief of Army Service Forces.

Adopting the military tactic that the best defense is a vigorous offense, Somervell tore into critics of the $134,000,000 oil field, pipe line and refinery project at Norman Wells and Whitehorse, Canada, and said it was fully justified at the time it was approved and is still justified by the contribution it will make to offensive action in the Pacific.

During 4 hours on the witness stand, Somervell took full responsibility for the project but said it had been started with full realization of the difficulties and after adequate consultation with his associates and superiors, and that all timid counsel had been disregarded.

The Army hoped to get a reserve of 8 million barrels at Norman Wells but now the field is known to have 58 million and probably 100 million barrels which Somervell said makes it the largest discovery in North America in 15 years.

This statement was refuted by Sen. Ed Moore of Oklahoma who read into the record a list of some 2 dozen larger fields, including East Texas, discovered in the U.S. during the past 15 years, and who told the committee a 100 million barrel field is not large in the oil business.

If he had it to do over Somervell said he would have built a 20,000-bbl. refinery at Whitehorse and a proportionately larger pipe line. He said he knew Canol could not be completed in the fall of 1942 as originally directed but wanted that date to shoot at, and it could have been finished last summer if it had been necessary to push it, but admitted he might have considered it more carefully if he had known it could not be in operation before spring of 1944.

Admitting that Canol was not designed as a commercially profitable venture, Somervell said it was fully justified as a strategic aid in defense of Alaska because in the spring of 1942 tanker sinkings were at their peak, the fleet would not be able to protect Pacific shipping for many months, and even a small quantity of oil near the Alaska highway was worth almost any cost. He said he did not consider the cost any more than he considered the cost of Army pipe lines in North Africa, Italy or Burma. Continuation and probably expansion of Canol is justified by crude-oil discoveries there and because it is a proved source of oil under U.S. control at a time when Ickes is proposing developing foreign oil sources much farther away. He said at the same time Canol was approved the Army undertook extensive oil explorations in New Zealand which proved futile and were abandoned while Canol was successful, but both were justifiable military risks at the time.

Lt. Col. T. A. Adcock explains some of the engineering aspects of the Canol project to Col. Theodore Wyman, chief of the pipe-line work, while some of the material was still stacked at Fort Smith

Welding Nearly Finished

Answering various criticisms of Canol, Somervell said the pour point of the oil is minus 72 while the mean winter temperature is minus 25; paraffin deposits can be handled by sedimentation, go-devils, or a slug of gasoline from the Norman refinery; while some oil men questioned the wisdom of building the pipe line none have said it could not be maintained and the best answer is that the Skagway-Whitehorse section has been in operation since last January; road parties on both ends of the crude-oil line are scheduled to meet this week, welding will be finished January 15, line fill has already started and is 29 miles from Norman and will be 80 miles by Christmas though the temperature is 15° below zero, and crude oil will reach Whitehorse early in March where storage is nearly completed; the first stage of the refinery will be completed January 30 and the second stage in May

As to cost, Somervell said about $24,000,000 remains on the books to be spent, of which $8,500,000 is earmarked for further exploration in

Northwest Canada and $7,000,000 for demobilization, cleaning up and bringing home the 10,000 civilians now at work there, leaving only $10,000,000 of construction cost to argue about, while about 99 per cent of the material has already been shipped there.

Canol is practically ready to deliver a small but substantial quantity of oil at a place where it is very much needed, and while we are no longer on the defensive in Alaska, Somervell said this oil is considered by the chiefs of staff to be essential in assisting an offensive operation in a way he said he had already explained to the Truman committee in secret session. He said the 100-octane gasoline to be produced there would provide 45,000 Flying Fortress hours of operation and much larger quantities of truck gasoline which is just as important. He admitted this is not sufficient for a major operation and must be supplemented by tankers from California.

Alaska Development Projected

He explained the refinery will have a throughput of 3,000 bbl. daily. Eight hundred bbl. will be used for operation and a yield of 2,220 bbl. broken down into 479 bbl. of 100 octane; 1,048 truck gasoline; 400 diesel oil, and 293 bbl. of Houdry charge stock and residual fuel oil. He said he would give the committee in secret session the reason for abandoning a Houdry unit at Canol and substituting a thermal plant.

The Army is joining with Interior Department in a $5,500,000 project to explore for oil in Alaska but it will take 12 to 18 months to develop this if found, is urging development in the Near East, and has given Russia $125,000,000 worth of oil equipment on lend lease, Somervell said, while Canol is a great prize almost within grasp and the only question about it is whether it should be expanded.

The contract with Imperial Oil, Ltd., is being renegotiated as to postwar production rights because of the fact that discoveries at Norman have been so much greater than anticipated, Somervell said, and the State Department has been requested to ask Canada to reconsider the agreement as to disposal of the project after the war.

Questioned about size of Norman Wells field, Somervell said there is a proven potential of 4,800 bbl. daily from wells already acidized and on the basis of acidizing remaining wells already drilled potential is 7,500 bbl. daily, but he added that the probable discoveries in the MacKenzie Valley by completing the drilling program will be far beyond the estimated 100,000,000-bbl. reserve of Norman Wells. He said if the Norman field proves as good as it looks the Army obviously will not attempt to develop it with the present 3,000-bbl. pipe line.

Chairman Truman stated that WPB and secretaries of Navy and Interior have recommended in the past few days that Canol be abandoned at once, but Somervell was not impressed and insisted vigorously that Canol was fully justified from the start and is well worth completing and maintaining.

Senate Action on Disney Bill Unlikely Until After Holidays

WASHINGTON, D. C.—The Senate is not expected to act until after the holidays on the Disney bill to increase the price of crude oil which was passed by the House last week.

The usual procedure would be for the Senate committee on banking and currency to hold hearings on the measure, but because of opposition from the administration on the ground that the bill is inflationary there might be considerable delay in securing action.

It is quite possible that the measure will be attached as a rider to a bill pending in the Senate and already passed by the House to prevent the Commodity Credit Corp. from paying so-called consumer subsidies to keep down the retail price of foodstuffs. This measure appears likely to pass the Senate, but would most certainly meet a presidential veto, which would kill the oil-price amendment unless the entire measure received support from two-thirds of each house. However, the Disney bill by itself might also be vetoed, so strategists may decide to take their chances with the Commodity Credit bill.

There have been rumors that the administration might attempt to head off final congressional action on the Disney bill by some sort of a compromise, such as advancing the price of crude oil by 20 cents per barrel. However, it would seem that the most strategic time for such a move would have been shortly before the House took up the bill. It is now believed that if any compromise is to be offered it will be held until the president vetoes the measure, if he does, in the hope that this would prevent the veto being overridden by Congress.

The Disney bill, as amended on the floor, was passed by the House in the following form:

A Bill, H.R. 2887

To fix the price of crude petroleum and its derivatives, and fixing a parity formula.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, In the fixing of prices for crude petroleum and the products thereof and derivatives therefrom, as provided under the Price Control Act of 1942, as amended, consideration shall be given to the necessity for exploring for crude petroleum and the maintenance of a competitive position in the petroleum industry and to that end shall give consideration to the parity prices as indicated by the relationship between the index based on the national average price of crude petroleum and the index of all commodities as reported by the U. S. Department of Labor, Bureau of Labor Statistics, in its wholesale commodity price index based on the year 1926: Provided, however, that such ceilings shall not be fixed or maintained at less than 80 per cent of parity and not to exceed parity per barrel above the present respective price ceilings for crude petroleum.

Resellers to Government Granted Markup Option

WASHINGTON, D. C. — Resellers other than refiners who submit bids to a government agency on gasoline and fuel oil were permitted by the Office of Price Administration this week to add a markup of 0.25 cent a gallon above the ceiling price of the refinery from which shipment is made.

Three conditions must be met to qualify the reseller for the markup, as follows:

1. The sale must be the result of a contract made after competitive bidding.

2. The bids must have been taken by the government agency on an f.o.b. shipping-point price basis.

3. The markup of 0.25 cent must not result in a laid-down cost in excess of the f.o.b. shipping-point ceiling price of each person participating in the bidding, plus the cost of transportation to destination.

The action is embodied in Amendment 147 to Revised Price Schedule 88, effective December 24.

Automotive-Gasoline Quota Reduced to 1,117,000 Bbl.

WASHINGTON, D. C.—A reduction of 43,000 bbl. in the daily allocation of automotive gasoline was certified here this week by the Petroleum Administrator for War to the Office of Price Administration, placing the volume available for rationing during the first quarter of 1944 at 1,117,000 bbl. a day.

PAW announced that total maximum automotive gasoline production currently is 1,800,000 bbl. daily of which 600,000 bbl. go directly to military agencies. Thus, the PAW declared, the certification represents virtually all the remaining gasoline available for all purposes. Daily quota of 133,000 bbl. of gasoline was earmarked for nonhighway and farm consumption, leaving 984,000 bbl. a day available for trucks, buses, passenger cars and other highway vehicles.

"The reduction of 7,000 bbl. a day in District 1 for the months of January, February and March," Deputy Petroleum Administrator Ralph K. Davies explained, "is in accordance with a comparable reduction in the claim placed by the Office of Defense Transportation, which is the claimant agency for bus, truck and passenger car needs.

"This was based upon the usual curtailment of car use during the peak winter months.

"Lowering of the District 2 allocation represents a seasonal drop in both nonhighway-farm consumption and highway demand reflected in the reduction by roughly 19,000 bbl. a day in the ODT's claim and by approximately 14,000 bbl. per day in the War Food Administration's claim."

Calling attention to the importance of adhering to the carefully established certifications, Davies wrote to the OPA, which is charged with coupon evaluation and distribution, emphasizing the importance of holding consumption to the amounts certified.

He said that, particularly, as respects District 5 holding of consumption to the levels certified "is absolutely essential if we are to avoid depriving the military force of gasoline needed to wage war in the Pacific area."

AUTOMOTIVE GASOLINE ALLOCATIONS IN BARRELS DAILY

	First quarter (1944)	Last quarter (1943)	Trucks, buses, passenger cars*
District 1	372,000	379,000	341,000
District 2	433,000	467,000	374,000
District 3	146,000	145,000	123,000
District 4	32,000	34,000	28,000
District 5	134,000	135,000	118,000
Totals	1,117,000	1,160,000	984,000

*Represents remainder of total allocation after satisfying nonhighway-farm demands in first quarter of 1944.

Cooperation Essential to Obtain Maximum Amounts of Equipment

WASHINGTON, D. C.—Close cooperation of equipment manufacturers, distributors, suppliers, petroleum-industry operators and the affected divisions of War Production Board and Petroleum Administration for War will be imperative in complying with Direction 1 to Priorities Regulation 18, issued by WPB November 20. Failure to cooperate is likely to impede petroleum production and construction programs.

PAW this week reiterated its appeal to operators of drilling equipment to file Form 37 which projects requirements on materials over the next 12 months, essential to scheduling steel tonnage.

With certain exceptions the direction requires that purchase orders for items named in the subjoined lists for delivery during the first 6 months of 1944 be placed with manufacturers before January 1, 1944. With the same exceptions, it requires that purchase orders for material for delivery during the second half of 1944 be placed before March 1, 1944. Operators are asked to note that the direction does not authorize persons to request delivery in advance of actual requirement.

The items affected by the direction are divided into two groups, as follows:

Group A (internal-combustion engine accessories and components): Camshafts, carburetors, crankshafts, electric-starting motors, fuel-injection equipment, generators, magnetos, mechanical governors, piston rings, pumps, radiators, valves (automotive type), and heavy-duty automotive-type components (axles, brakes, tires, transmissions, wheels).

Group B: Antifriction bearings, boilers (steel, pressure 100 lb. or more per square inch, land and marine), compressors, diesel engines, fluid power system, heat exchangers, high-pressure blowers, industrial-type wet-cell batteries, motors and generators (electric), motor controls (electric), turbines (steam), turbine generators, valves (control), valves (high-pressure, limited to plug valves, steel valves, and safety and relief valves), pumps (industrial and marine).

Three Exceptions

Three exceptions are permitted:

1. Items required for maintenance or repair purposes or as operating supplies.

2. Orders placed with or by distributors or suppliers who take actual delivery of the materials for resale.

3. Orders for Group B products where all orders for any single Group B item, placed by a purchaser with a single manufacturer for delivery during the same calendar quarter, have a total value of $10,000 or less.

The direction does not apply to delivery orders for use or second-hand products. An interpretation, now being drafted by the WPB, will answer in more detail certain questions concerning the operation of those exceptions.

The object of the direction is to assure prompt delivery by requiring major purchasers to place orders far enough in advance to permit detailed scheduling of the plants producing the items. Industries and consumers, including the military, able to make plans well into the future are benefited by the order which guarantees scheduled delivery.

(Continued on page 24)

THIS WEEK

PRODUCTION—PAW assigns quota of 4,707,150 bbl. daily in January. . . . Fulfills earlier predictions that demand would require production rate exceeding 4.7 million barrels daily by end of year. . . . California assigned increase of 18,300 bbl. . . . Scattered reductions elsewhere reflect fading productive ability. . . . Natural gasoline and condensate output will rise to estimated average of 277,550 bbl. daily, another high in this phase of operations. . . . ¶Texas balks at increasing East Texas allowable, until pressure declines are arrested. . . . Railroad Commission rejects requested increase by aviation-gasoline manufacturer, suggests readjustment of procurement schedules. . . .

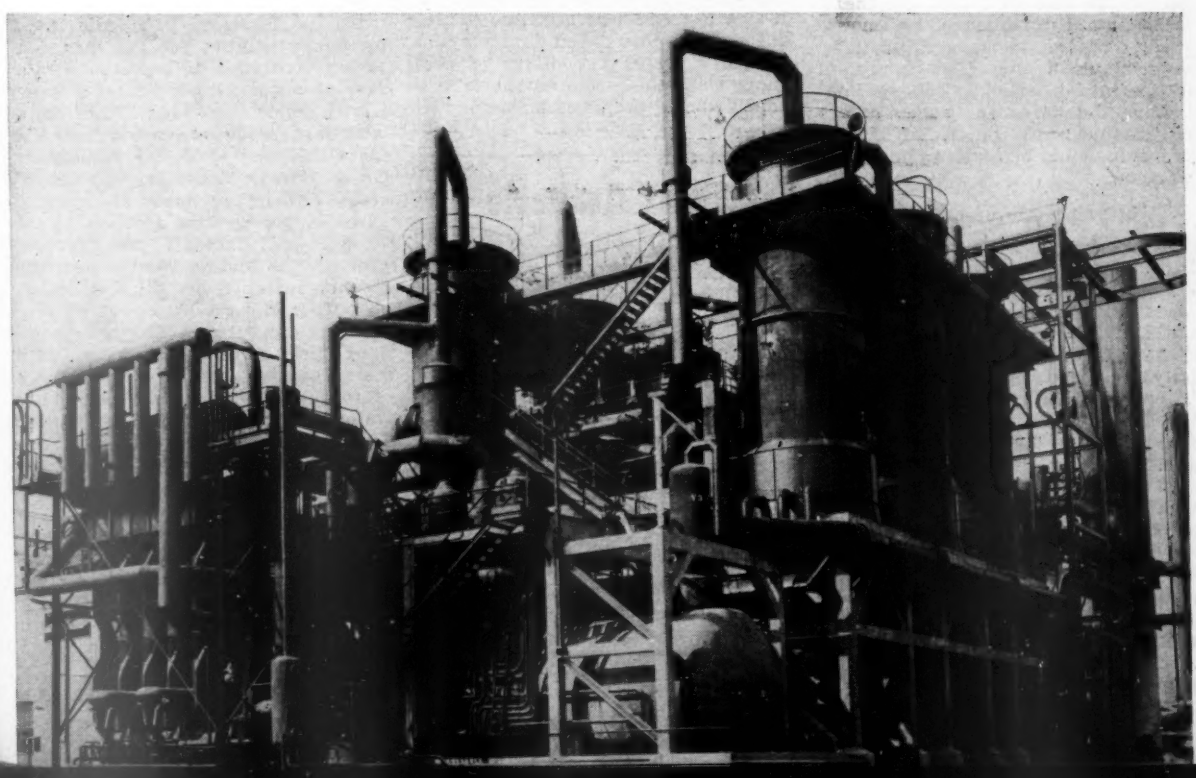
PRICES—Action dropped on Disney bill in Senate until after holidays. . . . Minor adjustments in Michigan and Louisiana authorized by OPA, similar action in Arkansas studied. . . . ¶Price ceilings removed on 80-octane, all-purpose gasoline, at request of Army and Navy to facilitate procurement. . . . Costs are considered in Army, Navy contracts, opening additional sources of supply to military services. . . .

REFINING—DPC boosts contract $4,000,000 for added aviation-gasoline facilities at J. S. Abercrombie Co., and Harrison Oil Co. plant in Brazoria County, Texas. . . . Total contract now calls for outlay of $22,700,000. . . . ¶Commitments for entire aviation-gasoline program, covering completed plants, those under construction, and those now starting, exceed $900,000,000, fully 30 per cent greater than outlay for synthetic-rubber plants. . . . ¶Flexibility of modern processing equipment shown by almost over-night conversion of California plant from toluene production to aviation-gasoline manufacture. . . .

SUPPLIES—Kerosene particularly acute on East Coast. . . Interior refiners urged to increase production and shipments, to avoid discomfort in eastern consuming centers. . . . ¶PAW cuts automotive-gasoline allocation for first quarter to 1,117,000 bbl. daily. . . . Trucks, buses, passenger cars assigned 984,000, remainder to nonhighway and farm equipment. . . . PAW emphasizes delicate balance on Pacific Coast, warns OPA that excess civilian consumption will rob military forces of vital supplies. . . .

ADMINISTRATION—Lt. Gen. Brehon Somervell enters vigorous defense of Army's Canol project, before Truman committee. . . . Says Norman Wells field reserve now 58,000,000 to 100,000,000 bbl. . . . Truman committee members apparently unimpressed, still consider it a poor project. . . . Overtures made to Imperial Oil, Ltd., and Canadian Government for renegotiation of original contract, giving United States greater postwar stake in reserves. . . . ¶Ickes finally releases Foreign Operations Committee report, suggesting diplomatic protection for American nationals as permanent policy. . . . ¶Naval affairs subcommittee still sniping at PAW's key men, insisting on disclosure of private company and government salaries. . . . ¶Lea's oil subcommittee of the House plans investigation of changes in competitive relationships. . . .

Among the Pacific Coast manufacturing units called on for constantly increasing volumes of war products is this catalytic-cracking unit in the San Francisco district. California plants will be relied upon for the bulk of aviation gasoline and other military fuels to carry out the intensified tactics in the Pacific theater



Liquefied Petroleum Gas Demand Rises 19 Per Cent Despite War Restrictions

by G. G. Oberfell

This review of conditions in liquefied - petroleum - gas operations has become an annual fixture and is recognized as the most factual discussion of trends in this phase of the industry. G. G. Oberfell, the author, is vice president in charge of research for Phillips Petroleum Co., Bartlesville, Okla. The company's dominant position in L.P.G. manufacturing operations gives added emphasis to the analysis of trends. This is slightly abridged from the full report.

MARKETED production of liquefied petroleum gases for fuel and miscellaneous purposes is estimated to have increased 19 per cent in 1943 over 1942 to 635,000,000 gal. This estimated increase of 102,600,000 gal. is made on a different basis than in this author's previous annual reviews. Details of the estimate are shown in Table 1. Changes in the industry made it appear desirable to modify former methods of reporting marketed consumption. Heretofore estimates included L.P.G. used in chemical manufacturing only when delivered in liquid form. Deliveries in gaseous form by pipe line from oil refineries and natural-gasoline plants were not reported. This year all L.P.G. used in chemical manufacturing has been eliminated from the estimates.

In 1942 the chemical manufacturing industry used 53,038,000 gal. of L.P.G. delivered in liquid form by tank truck and tank car. Chemical manufacturers also processed large volumes of gaseous hydrocarbons in the L.P.G. range delivered by pipe line from refineries and gasoline plants. In 1943 there was an unusually large increase in consumption of L.P.G. by chemical plants. Estimation of the amount used, however, is made difficult by duplications arising from interplant movement for partial processing. Publication of data regarding some phases of chemical utilization of L.P.G. probably would be undesirable during wartime.

War-Plant Consumption High

In general it may be said that rubber and aviation gasoline consumed rapidly increasing quantities of butanes and propane, particularly in the last half of 1943. Twelve butadiene plants charging butane and butylene were completed and placed in operation in 1943. Synthetic rubber output increased more than tenfold between the first and fourth quarters, from 10,486 tons in the first quarter to 123,300 tons in the fourth quarter. As previously stated L.P.G. use of these plants is not included in the present estimate. Concurrent with the building of synthetic-rubber plants the oil industry has been building aviation-gasoline plants requiring butane and butylenes. Isomerization of normal butane for subsequent alkylation with butylenes caused the diversion of a tremendous quantity of butanes from other uses.

For several years the relative volume of propane sold for L.P.G. purposes has increased and the relative volume of butane has decreased. In 1943 this trend was accentuated. Industrial consumers used products containing a larger percentage of propane or switched from butane to propane where propane tankage was available. In a few instances 80-lb. storage was replaced by 200-lb. working-pressure storage at industrial plants to permit conversion from butane to propane.

Although new domestic installations were subject to government approval a considerable number were made in 1943. Defense housing projects accounted for many new individual consumers. Government approval was given also to conversion of gas appliances to liquefied gas when consumers moved away from gas lines. New installations were approved in areas where no other fuel was readily available.

Domestic installations at the close of 1943 are estimated to total 1,900,000. This is an increase of 75,000 over last year's estimate. Part of the increase was owing to correction of the previous estimate and part to new installations. About 5,000 new buried-tank installations were made in the South. In Oklahoma, for example, 700 new installations were inspected by the state fire marshal in the first 10 months.

Utilities Increase L.P.G. Use

Use of liquefied petroleum gases by public utilities for gas manufacturing continued to increase at the rate of about 24 per cent per year. Gas utilities have been confronted with unprecedented demand from war industries and domestic consumers. On the Pacific Coast gas utilities increased their purchases of liquefied gases 10 per cent in addition to the 70 per cent increase the previous year. In the Middle West one utility recently installed two diluters having an output of 5,000,000 cu. ft. of propane-air gas per day. The same company also is mixing propane with water gas for underfiring a battery of four coke ovens and is enriching water gas for general distribution. This one company proposes to use 5,000,000 to 7,000,000 gal. of propane in 1944.

Greater diversion of butanes to aviation gasoline and rubber encouraged refiners in a number of instances to use propane as a gasoline blending agent to obtain sufficient volatility. Experiments have shown that up to about 3 per cent propane

Index Available

The complete editorial index of The Oil and Gas Journal for 1943 will not be incorporated in a regular issue, but will be printed separately. This 1943 index will be sent without charge to all subscribers requesting a copy by January 10. Only as many copies will be printed as there are requests at the time the index goes to press. This is made necessary by the paper shortage. Address requests to Circulation Department, P.O. Box 1260, Tulsa.

may be blended with motor gasoline to give good starting characteristics where butane supplies are deficient.

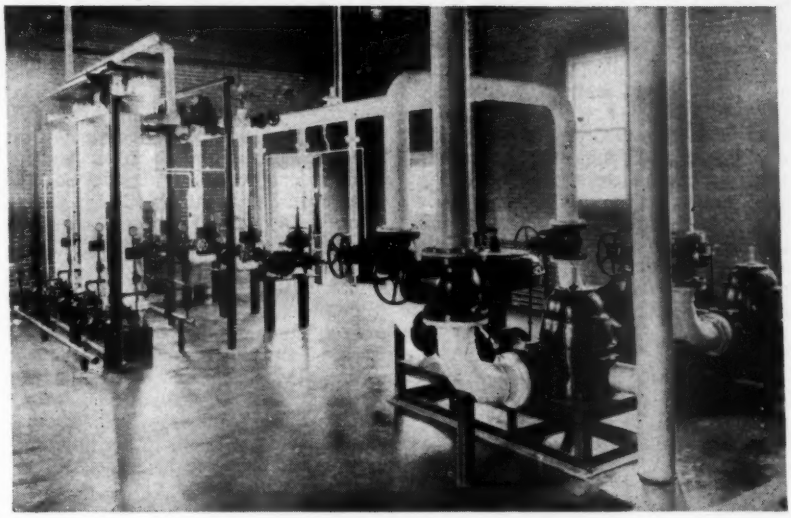
Industrial consumption of L.P.G. suffered a brief slump early in 1943. The upward curve of demand was resumed after a short delay as activity increased, particularly at aircraft subassembly and parts manufacturing plants and shipyards.

Propane Speeds Shipbuilding

The shipbuilding industry is an outstanding example of the use of liquefied gases to speed war work. It has been said by shipbuilders that propane has done more than any other product to speed the fabrication of ships. Propane has been used to augment and in many places to supplant acetylene for metal cutting operations. With oxy-propane torches cutting speed has been increased materially. The kerf is much smoother and thus does not require a grinding operation. The amount of slag to be removed is negligible. As an example of how this type of use has increased L.P.G. demand, shipyards supplied by one company increased their propane consumption 53 per cent in 1943 over 1942 which was, in turn, 170 per cent greater than 1941.

In other operations replacement of fuel oil with liquefied gases has speeded preheating of plates and pipes for bending. With propane it is possible to keep work clean by eliminating carbon deposit and localizing heat. This is particularly true in Van Stoning operations. Other applications where propane has helped improve working conditions and reduce heating time include core baking, lead melting, forging small parts, submerged combustion in pickling baths, rivet heating, rivet washing, die casting operations, and many types of heat treating.

Many of the increases in demand on the liquefied gas industry this past year were caused by the war but are not, strictly speaking, solely war demand. The glass industry is an example. The shortage of tinplate has diverted a great deal of packaging of food from metal to glass. In 1943 the glass industry manufactured about 13.4 billion containers compared with 11.5 billion in 1942 and 8.0 billion in 1941. The glass industry is manufacturing millions of bottles for direct war consumption such as blood plasma containers, medicine bottles, etc.



Interior of vaporizer house at an eastern steel plant. Propane from a battery of six 30,000-gal. storage tanks is vaporized and diluted with air to predetermined heating values in this equipment allowing for direct substitution for natural gas. Compressors not shown in the photograph, deliver the gas to heat-treating furnaces at high pressure

Use in Glass Industry

Eight typical glass manufacturing companies had a prewar annual consumption of 770,000 gal. of liquefied petroleum gases. For the past 2 years these eight companies have consumed 2,975,000 gal. per year. The companies in question were not converted from other fuels to liquefied gases so the increase largely reflects the expanded production.

Transportation has been a major problem of the industry in 1943. Additions to the fleet of pressure cars included 431 new propane cars, 100 new butane cars and 183 natural-gasoline cars modified to permit transportation of butanes. Many of these new and modified cars were not delivered until late in the year. The industry could have supplied additional quantities to utilities and other industries had it not been necessary also to provide transportation for large volumes of butane, butylenes and isobutane for the aviation gasoline program.

As the year progressed it was necessary to move ever increasing amounts of isobutane from natural-gasoline plants to oil refineries for alkylation. Normal butane movement to isomerization plants also required pressure cars. The situation was complicated further by the lack of balance within the refining industry on the production of so-called B-B (butane-butylene) cuts. It was not possible to match butylene production with alkylation capacity at every point. One result was the necessity to ship butane-butylene mixtures from one refinery to another.

Directive Limits Butane

Two government directives designed to aid the war imposed an additional burden on the liquefied petroleum gas industry in the last quarter. Directive 75 requiring all butanes containing as much as 20 per cent isobutane to be shipped to fractionating plants for separation of isomers reduced the total supply of butane available for conventional purposes and put an added strain on transportation facilities. The necessity for greater interrefinery movement of B-B cuts caused the Government to request all owners or operators of pressure cars to put 5 per cent of their fleets into this refinery

TABLE 1—MARKETED PRODUCTION OF LIQUEFIED PETROLEUM GAS

	Total sales		Distribution—Gallons per year					
Year	Gallons per yr.	Per cent increase over previous year	Domestic	Per cent increase over previous year	Industrial and miscellaneous	Per cent increase over previous year	Gas manufacturing	Per cent increase over previous year
1935	76,855,000	36.2	21,380,000	20.9	47,894,000	47.6	7,581,000	20.4
1936	106,652,000	38.8	30,014,000	40.4	67,267,000	40.5	9,371,000	23.6
1937	141,400,000	32.7	40,823,000	36.0	89,402,000	32.9	11,175,000	19.3
1938	165,201,000	16.7	57,832,000	41.7	94,983,000	6.2	12,386,000	9.8
1939	223,580,000	35.3	87,530,000	51.3	120,615,000	27.0	15,435,000	24.6
1940	313,456,000	40.2	134,018,000	53.1	159,153,000	32.0	20,285,000	31.4
1941	462,852,000	46.5	220,722,000	65.0	216,875,000	35.8	25,255,000	24.4
1942	532,402,000*	27.0*	299,559,000	36.0	201,477,000*	16.7*	31,366,000	24.0
1943	635,000,000†	19.0	350,000,000	17.0	246,000,000	22.5	39,000,000	24.0

*Not including 52,904,000 gal. used for chemical manufacturing.

†Chemical manufacturing consumption not included.

service. Most owners already were devoting large numbers of their cars to aviation service.

Trucking operations of the industry have been increased both for transfer of B-B cuts between refineries and for deliveries of L.P.G. to war plants and domestic consumers. Many manufacturers who formerly used tank cars are delivering 40 to 60 per cent of their product by tank truck. Truck delivery operations have been complicated by the manpower shortage, gasoline and tire rationing and delays in obtaining repair parts.

Weight Factor Reduced

In May 1943 the Interstate Commerce Commission, in deciding the issue in I.C.C. Docket 28663, Green's Fuel, Inc., vs. Atlanta & St. Andrews Bay Railway Co. et al, found the estimated weight of 6.6 lb. per gallon on liquefied petroleum gas from the Southwest to the Southeast unreasonable to the extent that such estimated weight exceeded 4.7 lb. per gallon. Rail carriers filed tariffs to become effective November 30, 1943, reflecting an increase of 40 per cent in rates subject to an estimated weight of 4.7 lb. per gallon which would have resulted in substantially the same per-car charges as previously prevailed by the use of estimated weight of 6.6 lb. per gallon.

The commission, in I. & S. Docket 5271, suspended the increased rates but the estimated weight of 4.7 lb. per gallon has been permitted to become effective. Therefore, effective November 30, 1943, the per-gallon charge will be approximately one-third less than prevailed prior to that date on shipments from Southwestern origin points to the Southeast, embracing substantially destination territory east of the Mississippi River and south of the Ohio River.

At the close of the year 1943, the industry is in the position of further "tightening its belt" in the face of greater demands by the War Manpower Commission for men for the armed services. A continuation of job studies, proper placement and utilization of the highest skills of available men and women, in conjunction with intelligent and conscientious leadership, should make it possible for the industry to not only maintain its position but to make further advances under what might be termed adverse circumstances.

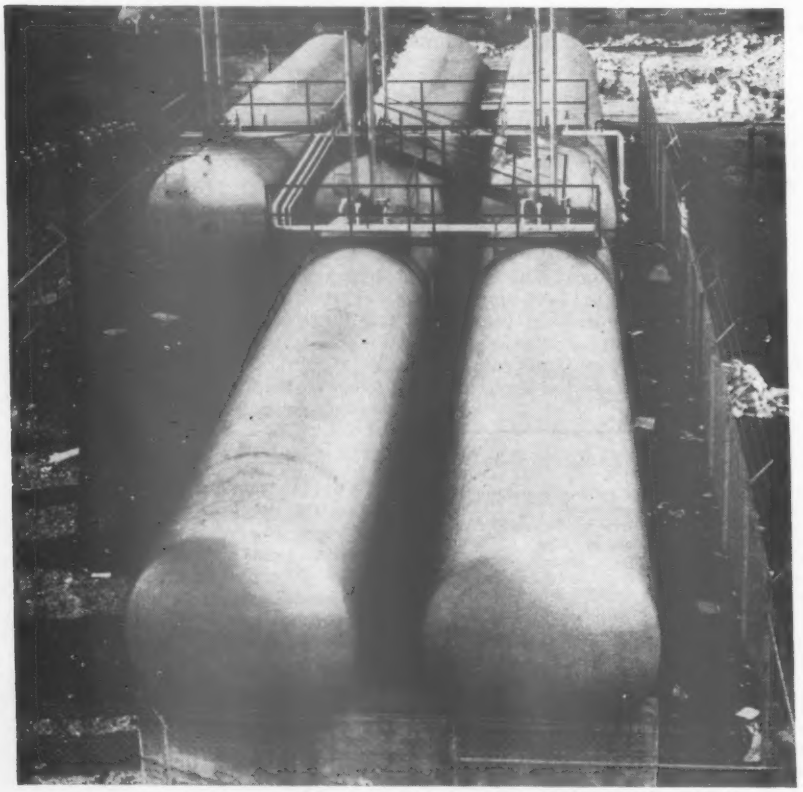
Ten New Plants

Ten new natural-gasoline plants begun since the war were put into operation in 1943 to increase materially the available supply of liquefied petroleum gases. Production was increased also by substantial additions to previously existing plants. Butane fractionating columns were installed where possible to increase the supply of isobutane for aviation-gasoline manufacture. Refrigeration was added at some plants to improve efficiency of extraction.

Texas and Illinois added more new production of liquefied gases than any other state. Illinois production rose about 5,000,000 gal. Three large recycle plants in Texas added materially to motor-fuel supplies as well as to production of isobutane, normal butane and propane. Two plants were built in Arkansas for the primary purpose of sulfur removal from sour natural gas to be used as fuel for war plants. Both plants are producing large quantities of liquefied gases as by-products.

To aid the war program one Texas manufacturer tied a group of old gasoline plants together by pipe line into a central treater where isobutane was recovered in addition to normal butane and propane. Previously mixtures had been produced at some of the small plants in the system but the project largely increased the production of L.P.G. for fuel as well as for aviation gasoline synthesis.

Another manufacturer increased production of L.P.G. with a minimum utilization of steel by passing natural gas through absorbers in the field and circulating the rich oil to a gasoline plant several miles away where still and fractionation capacity was available for recovering the L.P.G. and natural gasoline. At the year's end an Illinois manufacturer was producing raw gasoline at a simplified plant using minimum quantities of steel and transporting the raw product to an older natural-gasoline plant for fractionation.



Propane storage tanks at a glass plant. Manufacturers of optical and other special glass for war instruments have found propane a superior fuel

Refiners Raise L.P.G. Output

Oil refiners have increased recoveries of L.P.G. at many points although little of this increase in production is finding its way into normal L.P.G. markets. Virtually all is being used in the manufacture of aviation gasoline or synthetic rubber. A recent report of the U.S. Bureau of Mines stated that use of liquefied refinery gases for fuel purposes decreased 30 per cent in the first 9 months of 1943.

East Coast refiners have made more propane this year than last since their crude supplies have increased through operations of the big-inch pipe line and larger crude imports by tanker. Butanes manufactured by eastern refiners are being used almost exclusively for motor fuel or aviation gasoline.

Industry advisory committees were established in the five PAW districts by Administrator Harold L. Ickes to advise the Petroleum Administration for War on various problems affecting the production, transportation and distribuation of liquefied petroleum gases.

FOUNDED IN 1910 BY PATRICK C. BOYLE

the OIL AND GAS JOURNAL

Gains Through Legislation

WASHINGTON, D. C.—The action of the House of Representatives in approving the crude-oil price advances which the petroleum industry has been actively seeking for many months raises several questions as reflected in the daily comments of radio and press.

With these comments and other conditions in mind some within the industry who favor the increases and who need them in their own operations, are concerned as to the long-range consequences of attempting to advance basic petroleum prices by legislative fiat. They fear the establishment of a precedent leading to congressional decisions in the future relative to price levels as undesirable as the action last week was helpful.

Before accepting the normal conclusion that no price situation could be so critical as to justify an appeal to the Government's legislative branch it is necessary that critics understand conditions in this world-war center.

The adamant and defenseless position of the Government's pricing agency relative to petroleum markets is well known within the petroleum industry—not so well known outside as many would like to believe.

Familiarizing Congress with petroleum operations is one phase of public relations. It is the only medium of Government through which an aroused public can nullify the actions of an incompetent war agency. This price administration has refused to recognize the difference between the maintenance of a non-inflation front and essential support for a natural-resource industry around which both the war and peace fronts center.

It is futile to contend that petroleum price matters should never be brought into legislative halls. They have been there for some time. Military requirements and civilian shortages and rationing took care of that. Shortly the domestic oil phases are to be expanded into the international in a manner that every national legislator will realize the dominance of petroleum in world plans for the remainder of this century.

So the efforts of those who took the fight to Congress will not be in vain even though they ultimately fail through presidential veto. Legislators and their constituents will know better than ever before the problems of an industry which seeks only to strengthen itself through service. Its enemies will also realize that oil operators can take the offensive in matters affecting the well being of the entire country.

Should the present legislative effort prevail the position of those who seek control of this industry and our entire economy through bureaucratic administration has been weakened and the outlook brightens for the immediate return of private enterprise at the emergency's end.

Season's Greetings

To its old friends and new, the Journal extends the ever old, ever new wish for a Merry Christmas and Happy New Year

Consolidated Natural Gas Co. Unites Jersey Standard's Five Subsidiaries

by H. Stanley Norman

THE largest integrated unit in the natural-gas industry started functioning this month under the Delaware charter granted to Consolidated Natural Gas Co., the organization created to absorb the five operating subsidiaries of Standard Oil Co. (New Jersey). Individual companies brought together under single management are East Ohio Gas Co., Hope Natural Gas Co., Peoples Natural Gas Co., New York State Natural Gas Corp., and River Gas Co.

History of Consolidated dates back to the 1890's when Standard Oil Co. organized a company to market in West Virginia the natural gas which had been found there while drilling for oil. Currently, the system operates in parts of West Virginia, Ohio, Pennsylvania and New York.

Consolidated, organized for the purpose of acquiring the natural-gas subsidiaries which Standard of New Jersey was forced to divorce to avoid registering as a holding company under the Natural Gas Act, owns leases on 2,294,888 acres of land. It owns and operates more than 5,000 gas wells, and purchases gas from approximately 15,000 outside wells. To gather gas from these wells, transport it to markets and distribute it to ultimate consumers, the system owns and operates 17,366 miles of pipe line. The company owns and operates 89 compressor stations, including Hope Natural Gas Co.'s Hastings station in West Virginia with a compressor capacity of 29,000 hp., the largest in the United States.

Within recent months, Consolidated, functioning through the individual units, arranged for supplementary supplies of natural gas. One of the supply contracts was between East Ohio Gas Co. and Panhandle Eastern Pipe Line Co., whereby the former concern will purchase 50,000,000 cu. ft. of gas per day, or one-third of East Ohio's sales, whichever volume is the lesser.

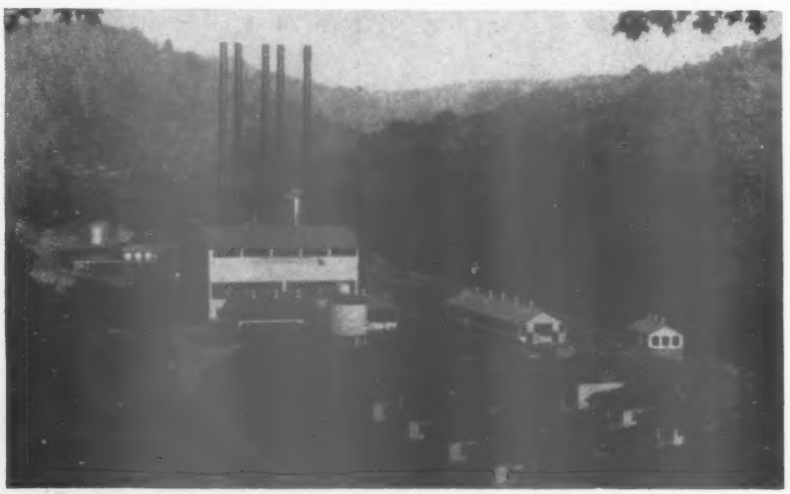
Hope Augments Supply

More recently, Hope Natural Gas Co., arranged to purchase 75,000,000 cu. ft. of gas per day at Cornwell station, Kanawha County, West Virginia, from Tennessee Gas & Transmission Co., which is building a 24-in. gas line from Corpus Christi, Tex., to West Virginia. The contract with the Tennessee company which will be implemented between August 1, 1944, and January 1, 1945, also provides that Hope Natural has the option of purchasing 25,000,000 cu. ft. of additional gas, raising the full scope of the agreement to 100,000,000 cu. ft. daily.

Negotiations were started last week between Ohio Fuel Gas Co., subsidiary of Columbia Gas & Electric Corp., and Ohio Fuel Gas Co., for a transfer of certain properties which would simplify operations. Under the proposal now pending study by the Securities Exchange Commission, Ohio Fuel Gas Co. would transfer to East Ohio Gas Co., 74 natural-gas wells in Stark County, Ohio, and rights to wells and equipment. East Ohio would transfer to Ohio Fuel wells owned by the former company in Ashland, Coshocton, Holmes, Knox, Medina and Wayne counties, Ohio. In addition, the Shreve compressor station in Wayne County, $86,000 in cash and 1,648,647,000 cu. ft. of natural gas to be delivered during off-peak seasons would be assigned to Ohio Fuel Gas.

From a production standpoint, Hope Natural Gas Co., is the balance wheel of the new Consolidated system. Hope's production, which totaled approximately 20,000,000,000 cu. ft. last year, comes from 3,719 wells on 397,939 acres of operated leases. Undeveloped leases cover 591,887 acres. Gas purchased by Hope amounted to almost 70,000,000,000 cu. ft. last year. The company's pipe-line system consists of 3,145 miles of gathering lines, 1,286 miles of trunk lines and 962 miles of distribution lines. Combined, Hope's pipe-line system makes up approximately 33 per cent of the Consolidated transportation facilities.

Consolidated's most important distribution subsidiary is East Ohio Gas Co., which was organized in 1898 for the primary purpose of marketing gas in Ohio produced by Hope in West Virginia. Through the years, however, East Ohio has developed considerable production in Ohio. Total pipe-line mileage, including gathering lines, main transmission lines and distribution lines, is approximately 40 per cent of the mileage in the Consolidated system. East Ohio's pipe-line facilities consist of 684 miles of gathering lines, 772 miles of main-transmission lines and 5,443 miles of distribution lines. East Ohio recently constructed a 120-mile 20-in. pipe line from its system south of Cleveland,



Hope's Hastings compressor station in West Virgina rated at 29,000-hp. capacity, the largest in the country

Ohio, to the Panhandle Eastern line through which an estimated average of 50,000,000 cu. ft. daily will be acquired for the next 5 years.

Peoples Natural Gas Co., which operates in Pennsylvania, is the oldest of Consolidated's five subsidiaries. The company was organized in 1885, independent of Standard. Peoples is a gas producer as well as a distributor. The company owns approximately 1,620 wells and they produce about 11,000,000,000 cu. ft. annually. Of 25,000,000,000 cu. ft. of gas purchased, Peoples acquires about 40 per cent from subsidiaries of Consolidated and 40 per cent from independent producers. Peoples' own production represents 30 per cent of Consolidated's total. Its pipe line mileage represents approximately 25 per cent of the Consolidated system. Facilities consist of 1,560 miles of gathering lines, 963 miles of transmission lines, and nearly 1,879 miles of distribution lines.

The River Gas Co., which does a retail distribution business in Marietta and several other towns in southeastern Ohio, is the smallest of Consolidated's subsidiaries. The company owns 48 wells and 420 miles of pipe lines.

New York State Natural Gas Corp., is a gas production and transmission company and sells its gas at wholesale to other gas companies. The company was originally established to transport and sell gas from the Oriskany pools in northern Pennsylvania and western New York in the early 1930's. More recently, New York State's system has been connected with lines of the Peoples company which now supplies most of the gas requirements of the former concern. Last year, New York State Natural produced 900,000,000 cu. ft. of gas. It operates 278 miles of trunk lines, owning 188 miles and leasing 90 miles from Peoples.

Lerch Chief Officer

F. H. Lerch, Jr., president of Consolidated, has been the coordinating head of all natural gas interests of Standard Oil Co. (New Jersey) since 1934. Previously, he was an engineer for Ford, Bacon and Davis, Inc., and from 1937 to 1933 he was resident manager of the Interstate Natural Gas Co., Inc., a Standard of New Jersey subsidiary in Louisiana.

William A. Dougherty, general counsel of Consolidated, has served as general legal adviser of all natural gas interests of Standard of New Jersey since 1933.

J. French Robinson, director of Consolidated and president of East Ohio Gas Co., joined the natural gas subsidiaries of Standard of New Jersey in 1921 as a geologist and engineer for Peoples, succeeding in 1936 to the presidency of that company. He resigned from Peoples in 1940 and became president of East Ohio Gas.

Loring L. Tonkin, director of Consolidated and president of Hope Natural, has served continuously with the Hope company since his graduation from Cornell University in 1912. He became chief engineer, vice president and director in 1932 and president in 1939.

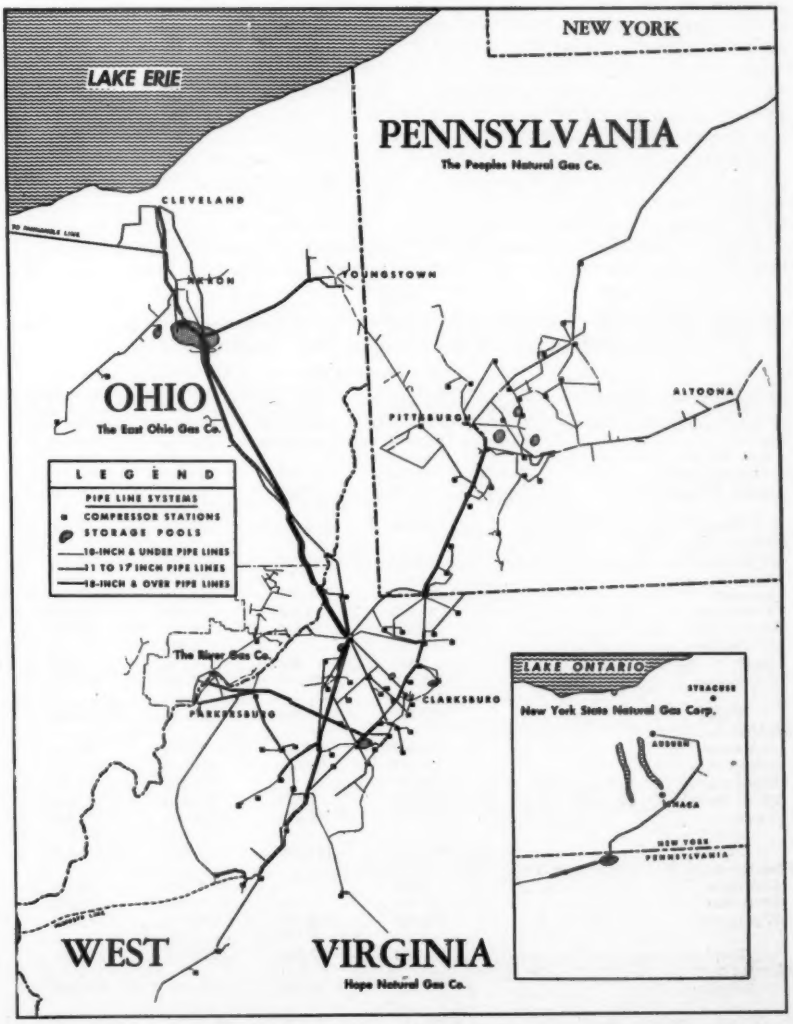
Edward M. Borger, director of Consolidated and president of Peoples, has served with Standard of New Jersey natural-gas subsidiaries since 1918. He was general counsel for Peoples, Hope, River and New York State companies from 1935 until his election to the presidency of Peoples.

Charles William Cooper, vice president of Consolidated, entered the employ of Standard of New Jersey's gas subsidiaries in 1939 as an attorney for Peoples. In 1941, he was transferred to the staff of Gas Companies, Inc.

Edward E. DuVall, secretary of Consolidated and James Comerford, treasurer, have served in Standard of New Jersey natural gas subsidiaries since 1911 and 1919, respectively.

John M. Crawford, Carl N. Osborne and William Porter Witherow, Consolidated directors, have never served either as officers or employes of Standard of New Jersey. Crawford is chairman of Parkersburg Rig and Reel Co., having recently resigned the presidency of that company. Osborne is a director of M. A. Hanna & Co., Cleveland, Ohio, and Witherow is chairman and president of Blaw-Knox Co., Pittsburg, Pa.

Consolidated's capital stock consists of 2,728,359 shares of $15 par value stock. This total of $40,925,385 par value of Consolidated stock was issued to Standard Oil Co. (New Jersey) in exchange for all the capital stock of the five natural gas companies. When all stock is distributed, Consolidated will have approximately 120,000 stockholders, all of whom are stockholders of Standard of New Jersey, receiving 1 share of Consolidated for each 10 shares of Standard of New Jersey owned.



Map of the five natural-gas systems composing properties of the Consolidated company

Increase of 12,950 Bbl. in Daily Production Quota Is Centered on Pacific Coast

by Henry D. Ralph

WASHINGTON, D. C.—Another all-time high in domestic petroleum production was certified for January in the state quotas assigned last week by the Petroleum Administration for War. A net increase of 12,950 bbl. a day was certified over the December quotas, lifting the nation's daily average output to 4,707,150 bbl.

Decreases in the productive capacity in Districts 1, 2 and 4 resulted in slightly reduced quotas for states in those areas. The rate certified for District 3 remained unchanged, although, within the district, the crude-oil rate in Louisiana was reduced by 10,000 bbl. a day in anticipation of an increase in natural-gasoline production by the same amount.

The net increase on a nation-wide basis is attributable entirely to California where the PAW said additional productive capacity has been made available as a result of new drilling and minor upward adjustments of maximum efficient production rates for several fields.

The estimated production of 277,550 bbl. daily of natural gasoline and condensate is another all-time record for products in this classification. The January estimate compares with the previous record of 269,100 bbl. daily calculated for December.

The reductions of 2,300 bbl. daily in District 1 and of 2,750 bbl. in District 2 largely reflect declining productive capacity in Pennsylvania and Oklahoma.

Texas' quota of 2,018,000 bbl. daily is unchanged but compares with actual output of 1,421,800 bbl. daily a year ago, showing current withdrawals to be approximately 42 per cent greater than they were 12 months ago.

PRODUCTION RATES IN BARRELS PER CALENDAR DAY

	January 1944		Dec. 1943, certified total petroleum liquids	Jan. 1943, actual production total petroleum liquids
	Certified total petroleum liquids	Estimated natural gasoline and condensate		
District 1:				
New York	14,000	.....	14,400	13,500
Pennsylvania	43,600	1,600	45,500	45,200
West Virginia	16,400	7,400	16,400	17,100
Total	74,000	9,000	76,300	75,800
District 2:				
Illinois	227,700	12,700	227,700	249,000
Indiana	14,400	.....	14,400	15,500
Kansas	291,200	6,200	291,100	301,000
Kentucky	29,000	3,000	28,500	19,500
Michigan	56,200	200	57,100	57,700
Nebraska	1,300	.....	1,500	2,100
Ohio	9,350	450	9,600	8,600
Oklahoma	356,000	28,000	358,000	368,400
Total	985,150	50,550	987,900	1,021,900
District 3:				
Arkansas	81,700	4,800	81,700	76,400
Louisiana	375,700	32,000	375,700	337,500
Mississippi	48,000	.....	48,000	57,000
New Mexico	116,600	6,000	116,600	102,500
Texas	2,018,000	126,000	2,018,000	1,421,800
Total	2,640,000	168,800	2,640,000	1,995,200
District 4:				
Colorado	7,000	.....	7,000	6,400
Montana	23,800	300	23,800	18,800
Wyoming	103,400	3,400	103,700	87,400
Total	134,200	3,700	134,500	112,600
District 5:				
California	873,800	45,500	855,500	806,600
Total United States	4,707,150	277,550	4,694,200	4,012,000

FEA to Assign Oil Expert To Middle East Territory

WASHINGTON, D. C. — Foreign Economic Administration has decided to assign a petroleum specialist to Cairo, Egypt, to handle supply and demand problems in the Middle East area. The step, taken in view of increasing oil activity, is expected to help in coordinating exports of American petroleum products to the United Nations countries to obtain the most efficient use of products, shipping space, and containers.

Under the proposed program, which, officials said, corresponds to that of other commodity specialists FEA has stationed permanently throughout the world, requested quantities of oil would be reviewed at FEA's middle-eastern headquarters in Cairo.

"It is the usual procedure to have men in the field where the supply problem originates to help the Washington office with the control of exports from the United States to the United Nations," one official said.

Standard of California Posts Oil Prices for Gato Ridge

SAN FRANCISCO, Calif. — Standard Oil Co. of California, which previously had not posted prices for crude in the Gato Ridge field, Santa Barbara County, has announced the following schedule: 12 to 12.9 gravity, 74 cents per barrel; 13 to 13.9 gravity, 76 cents; 14 to 14.9 gravity, 78 cents; 15 gravity and above, 80 cents.

Santa Rita and Northwest Companies Are Dissolved

Dissolution of Santa Rita Oil & Gas Co. and Northwest Refining Co., subsidiaries of Carter Oil Co., will become effective January 1, and after that date the holdings of the two companies will be merged with operations of Carter's Northwest division, with headquarters in Billings, Mont. The Northwest division is under supervision of R. E. Damp.

NO. II OF A SERIES
HOW TUBE-TURN WELDING FITTINGS BENEFIT WAR INDUSTRY
TUBE TURNS STEEL BEFORE FORGING
TUBE TURNS STEEL AFTER FORGING
EXTRA STRENGTH
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Tube-Turn Welding Fittings prolongs piping service under wartime demands!

URGENT three-shift war plant schedules demand uninterrupted piping service—yet they impose triple duty on vital piping arteries. Fittings and joints bear the brunt of this wear and strain.

Tube Turns' exclusive manufacturing process actually improves on the top quality seamless steel tubing from which these fittings are forged. Proof lies in the 100X photomicrographs shown here. The finer grain quality in the Tube Turns metal structure guarantees the added strength and greater resistance to wear and corrosion. Even *better* proof lies in the long, unfailing service Tube-Turn Welding Fittings are rendering in thousands of war plants today.

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TUBE-TURN

Welding Fittings and Flanges

Mexico's Crude-Oil Production Climbs

PETROLEOS MEXICANOS' producing operations in November fell slightly behind the October rate but were sustained substantially above the 10-month average for 1943 and exceeded all monthly output figures for 1942, excepting January and February.

Production of 3,249,074 bbl. was reported in November from properties operated by Petroleos Mexicanos, the Mexican Government petroleum agency, including independently owned lands in Tampico which currently are under Pemex management.

The daily average output of 108,302 bbl., compares with 110,299 bbl. registered in October and with a 10-month average of 92,245 bbl.

November declines were confined to the North Tampico and Poza Rica districts. Poza Rica output averaged 56,191 bbl. daily in November compared with 57,345 bbl. in October. Production from the Isthmus region increased to 12,849 bbl. daily in November, reflecting the completion of a new well in the deeper pay zone now under development in that district.

PEMEX PRODUCTION BY FIELDS
(Figures in barrels)

District—	November	October
North Tampico	506,351	598,085
South Tampico	671,495	656,129
Poza Rica	1,685,745	1,778,692
Isthmus area	385,483	386,363
Total	3,249,074	3,419,269

Wyoming Expansion Program Completed

CHEYENNE, Wyo.—Continental Oil Co.'s improvements and extensions at its Lance Creek, Wyoming, natural-gasoline plant to assist in the 100-octane aviation gasoline program are about completed and ready to go into operation as soon as final connections are made. Plant capacity has been increased from 25,000 to 100,000 gal., primarily to furnish additional stocks for Frontier Refining Co. and Utah Oil Refining Co. aviation gasoline plants at Cheyenne, Wyo., and Salt Lake City, Utah. While gas capacity was raised from 19,000,000 to 23,000,000 cu. ft. per day, the principal advantage is derived from the increase in size of field lines and improvements to bring in the gas at low pressure and make available light vapors which formerly were not recovered. The products most vitally needed are recovered primarily from these vapors.

The Salt Creek plant of Standard Oil Co. of Indiana, revamped and improved for similar purposes, has been completed except for cleanup work, and likewise, will furnish stocks for the 100-octane plants mentioned. The aviation gasoline units of Frontier at Cheyenne, Sinclair Refining Co., at Sinclair, Wyo., and Utah Oil Refining at Salt Lake City, probably will not be ready for full operation until early in 1944. Sinclair has had 600 men at work for 14 months on the improvements. It is being built by M. W. Kellogg Co. and Fluor Corp. While capacity is a military secret, an officer states it will be sufficient per day to enable 100 Flying Fortresses based in England to bomb Berlin with 50,000 lb. of bombs.

Cycling Plant Proposed Near Alta Mesa Field

Construction of a cycling plant in the Alta Mesa area, southwestern Brooks County, Texas, is under consideration by Standard Oil Co. of Texas. The tentatively selected plant site is about 15 miles southwest of Standard of Texas recently discovered deep gas-condensate production 3½ miles southeast of Alta Mesa in the old Union Oil Co. of California 1 Justo Chavana et al which was deepened from 6,652 ft. to 7,361 ft.

The Alta Mesa field proper has been on production since 1936 with a proven area of 1,300 to 1,500 acres in the Catahoula and Frio around 2,400 and 3,000 ft., respectively. Standard of Texas has been an active producer in the shallow district and holds considerable acreage in the general vicinity.

The deep discovery well had a blowout and fire at 7,288 ft., only 3 ft. in a coarse sand topped at 7,285 ft. After the well was brought under control it produced approximately 2,500,000 cu. ft. of gas and a spray of condensate before operators cored the hole to 7,361 ft.

Combs Submits High Bid for Channel Drilling Privilege

WASHINGTON, D. C.—E. E. Combs, Long Beach, Calif., was high bidder for the privilege of drilling for federal-owned oil and natural gas underlying the Cerritos Ship Channel between Long Beach and Los Angeles, according to announcement here by Department of the Interior. Combs offered to pay a bonus of $509,520 on the approximately 92 acres to be leased in addition to the royalty of 16⅔ per cent which the Government is asking on the production.

Richfield Oil Corp. offered $46,320 bonus and a royalty of 27 per cent instead of the prescribed 16⅔ per cent. Union Pacific Railroad offered $100,000 bonus and Trigood Oil Co. $23,160.

Cooperation Essential to Get Maximum Supplies

(Continued from page 14)

Those unable to make long-range plans are adversely affected, since limited manufacturing capacity will make it difficult to obtain prompt delivery. Prime contractors and petroleum operators must be alert to unfavorable possibilities and must obtain the cooperation of manufacturers, distributors, suppliers, and affected WPB and PAW divisions to avoid interferences with the program of supplying increasing quantities of petroleum and petroleum products.

Manufacturers, distributors, and suppliers will be required to further extend their cooperation in making items available for petroleum use by the time these are required for either a production or construction operation.

Applications for exceptions may be filed through PAW in Washington. Because it is generally known that the petroleum-supply program is one of unchallenged importance, applications for exceptions will be expedited, if at all possible, when materials are required for an authorized petroleum use.

Active Drilling Campaign In Prospect for Georgia

WAYCROSS, Ga.—An active exploration campaign is in prospect for 35 southern counties of Georgia, with more than 8,000,000 acres of land under lease and major oil companies bringing in office and technical staffs. The Texas Co. has an office force of 15 men here. Sinclair Prairie Oil Co. is seeking housing accommodations for geologists, and the Geophysical Service, Inc., of Dallas, Tex., is increasing its crews.

Study is still under way of the deepest test drilled in South Georgia, suspended at 7,320 ft., with final reports still awaited. This test was near Donaldsonville.

Companies and approximate acreages leased are: Humble Oil & Refining Co., 2,500,000 acres; Standard Oil Co. of California, 1,500,000; Texas, 500,000; Gulf Oil Corp., 250,000; Sun Oil Co., 1,500,000; Hassie Hunt, Dallas, 50,000; Murray Sells, Gladewater, Tex., 85,000; Tide Water Associated Oil Co., 150,000; Sinclair, 175,000. Several independents have heavy acreages.

Date for Hearing Set

WICHITA, Kans.—State Corporation Commission's monthly market-demand meeting to determine the Kansas crude oil allowable for January will be held here December 28.

House Oil Committee Proposes Hearing on Trend in Competition

WASHINGTON, D. C.—Competitive conditions in the oil industry and methods of government wartime controls will be reviewed by the petroleum subcommittee of the House shortly after the holidays.

Chairman Clarence F. Lea of California, who heads both the full committee on interstate and foreign commerce and the petroleum subcommittee, hopes to find time early in January to hold another of his series of continuing examinations into the oil situation, and now that the price problem is no longer before the House he intends to take up "a number of matters".

While the agenda for discussion has not been completed, it is understood the committee wants to examine complaints that major oil companies dominate the Petroleum Administration for War, and that the competitive position of independent operators is not being maintained.

Lea has also expressed an interest in the Petroleum Reserves Corp. and other foreign activities of PAW Ickes, and it is most probable that this subject will be examined at the same time.

Price Control Removed on All-Purpose Gasoline

WASHINGTON, D. C.—Price control on sales of 80-octane (A.S.T.M.) all-purpose gasoline to the U.S. Government or any of its agencies was removed here last week by the Office of Price Administration.

Request for the exemption was made by the Army and Navy. These agencies scrutinize the cost data submitted by sellers of this grade of gasoline before negotiating contracts, the OPA explained, and will keep the price agency informed of prices at which contracts are arranged. Control was removed in Amendment 149 to Revised Price Schedule 88, effective December 24.

Arkansas to Survey Pressures Quarterly

EL DORADO, Ark.—Quarterly survey of reservoir pressures in the controlled fields of Arkansas revealed that reservoir conditions in the oil and gas pools of the state are better now that at any time during the past year.

Making such a report to the Arkansas Oil and Gas Commission, state petroleum engineers noted that there had been only slight pressure declines during the past 3 months. They reported that the Magnolia and Shuler pools were the only fields showing decreases in the production of salt water. The commission placed a penalty on salt-water producers in the Magnolia field in August, and this is believed to have been a factor in the decline in that field.

The Village pool with a decline of only 0.03 lb. per sq. in. daily made the best showing, but the real leader among the controlled pools was the Midway field of Lafayette County where water is being reintroduced into the producing formation. The Midway field showed a decline of only 0.04 lb. per sq. in. with a daily allowable of 6,400 bbl.

Declines in pressure ranged from 0.03 to 3 lb. per sq. in. daily.

Liberty Freighter Is Named For Pioneer Texas Oil Man

HOUSTON, Tex.—The J. S. Cullinan, ninety-seventh Liberty freighter completed by Houston Shipbuilding Corp., was launched at the Irish Bend shipyard here recently honoring an oil pioneer who helped found Texas Co. and the predecessor to Magnolia Petroleum Co.

Mr. Cullinan, who died several years ago, was born in Sharon, Pa., in 1860. He went to work as a youth for Standard Oil Co. and was identified all his life with the oil industry.

Going to Texas, Mr. Cullinan helped develop early production at Corsicana, where he formed J. S. Cullinan Co., which built the first refinery and pipe line in Texas. Later he formed Corsicana Refining Co., parent of the present Magnolia Petroleum Co. In 1902 he moved to the Spindletop discovery at Beaumont, helped organize Texas Co. and served as its president from 1903 to 1913.

After retiring from Texas Co., Mr. Cullinan organized American Republics Corp. He is credited with being the first to transport Texas crude by water to the East Coast.

API Hopes to Celebrate Allied Victory in 1944

A quarter-century of progress and service will be celebrated by American Petroleum Institute at its twenty-fifth annual meeting in the Stevens Hotel, Chicago, November 13-16, 1944, according to an announcement by W. R. Boyd, Jr., president. The last two annual meetings have been war congresses, and the theme of the twenty-fourth was "Oil Goes to War." It is hoped that continued Allied successes will make victory in Europe complete and that oil's contribution to the victory will be the main topic of next year's meeting, Boyd said.

DEATHS

Warren Gilbert Guiss, 61, who was secretary-treasurer of McMann Oil & Gas Co. until it was sold to Stanolind Oil & Gas Co. in 1930, died in Tulsa December 14. At the time of his death he was in charge of oil accounting for the J. A. Chapman interests in Tulsa.

Clyde Miller, 50, associated with his brother, Ed Miller, in operation of Lincoln Tank Co. in Tyler, Tex., died December 12 at the home of a sister in Joplin, Mo. Miller, a veteran of World War I, went to Tyler at the opening of the East Texas oil field.

Hicks E. Thompson, 57, for 25 years in the service of Magnolia Petroleum Co., died December 14 in Dallas, Tex. At the time of his death he was assistant superintendent of Magnolia's right-of-way and claims department.

Walter E. Gilliland, 56, for 19 years an employe of Sinclair Pipe Line Co., died December 14 in Pasadena, Tex.

Neil M. Graham, 55, formerly superintendent of Lake Charles Gas Co., Lake Charles, La., died December 14 at his home in Houston, Tex.

Robin L. Smith, 68, employed for the past 24 years by United Gas Co., died December 14 at his home in Shreveport, La.

Bernard B. Daily, 95, for years an oil-well driller in Pennsylvania, California, Texas, and Illinois, died December 8 in Bentleyville, Pa.

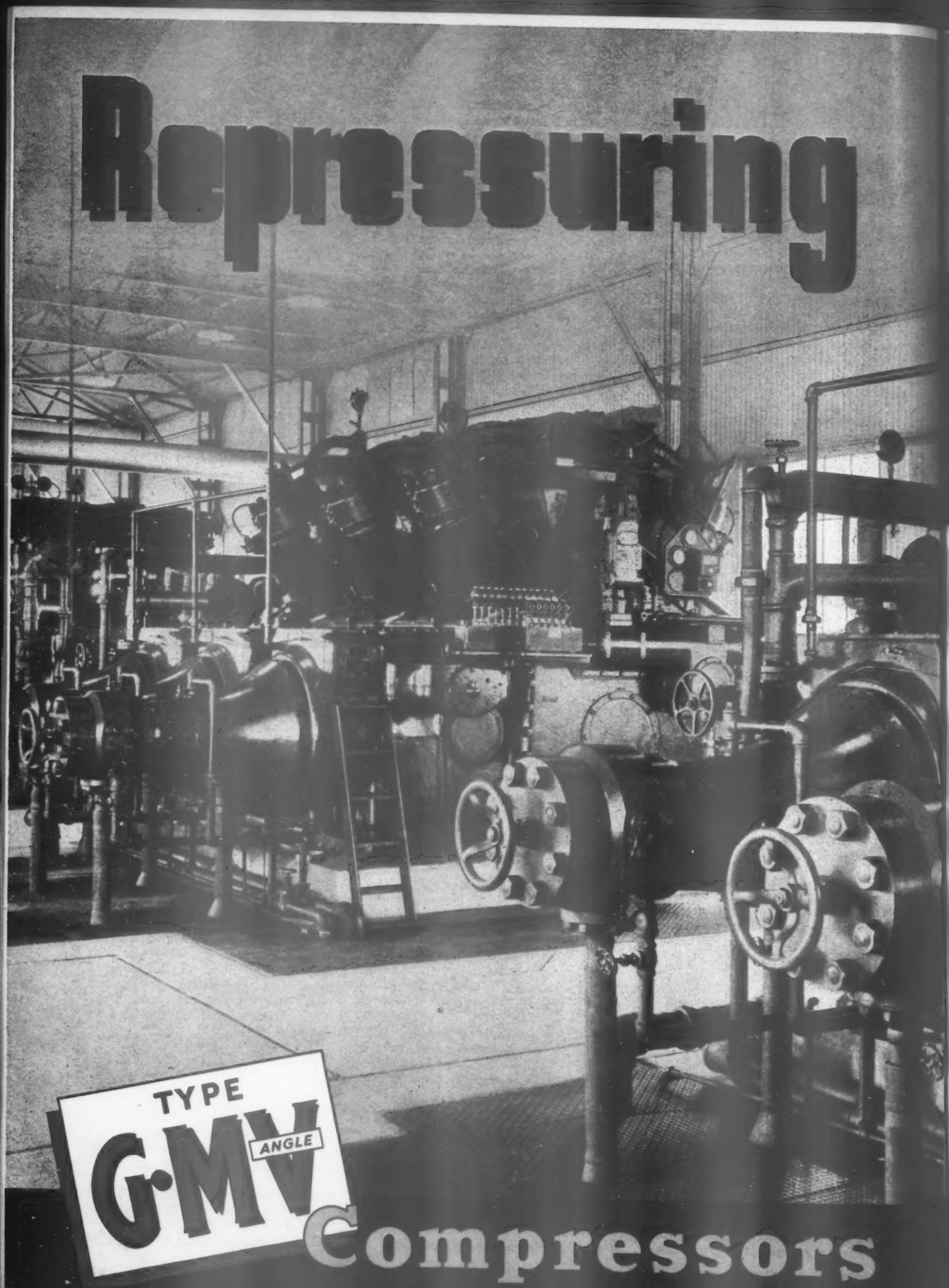
James F. Hudson, Jr., 57, drilling contractor, died recently in Bradford, Pa., where virtually his entire life had been passed.

P. E. Taggart, 54, Bridgeport, Ill., superintendent of Big Four Oil & Gas Co.'s natural-gasoline plant in Bridgeport and superintendent of Southwestern Oil & Gas Co., Sandoval, Ill., died December 9 in a hotel in Washington, D. C., where he was attending a meeting of directors of Independent Petroleum Association of America. He was born near Centerville, W. Va., and had resided in Bridgeport since 1907.

Theodore Barber, 74, Bradford, Pa., employed by Minard Run Oil Co., died December 17 in a Bradford hospital.

John C. Barrett, 71, independent oil man, died December 16 in his apartment in Oklahoma City, Okla.

Charles Miller, 74, retired oil-well driller, died December 20 in a convalescent home in Tulsa. He had resided in Fox Hotel there.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The Glenn Pool gas repressuring operation began in May 1940. Through it, average daily output has been stepped up from 714 to 1893 bbl/day, and the productive life expectancy of the pool extended perhaps 10 to 20 years. The operation covers 18 leases, over 2000 acres, including 308 old oil wells, 51 new oil wells and 65 new input wells.

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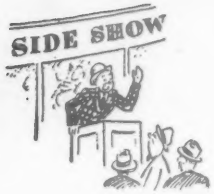
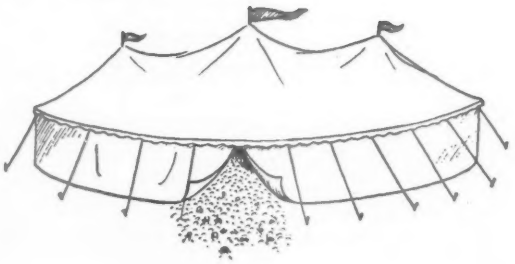


Don't mistake a sideshow for the big main tent



IF you go to the circus, the performance in the big top is the chief attraction You don't let the sideshows keep you from the main event

Refining today certainly is no circus but a difficult business, beset by many problems

But here is the point—if you need help in solving these problems, come first to headquarters—then see the sideshows if you want to

This "main tent" requires no admission ticket

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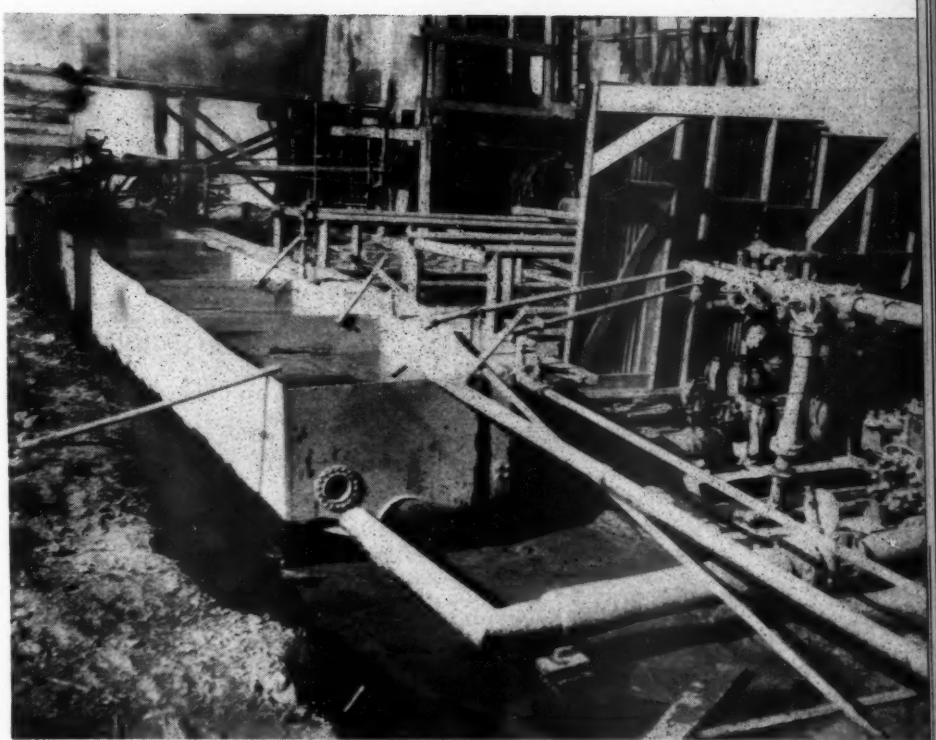
Mud Control for Deeper Drilling In Rocky Mountain District

by Neil Williams

DEEPER drilling in the Rocky Mountain area is presenting greatly increased problems in mud conditioning. Conditions are being encountered that are necessitating closer and more effective control over the qualities of the drilling fluid used. Special practices are having to be adopted and facilities provided for maintaining this control. Operators generally throughout the area are having to become more "mud-minded" and cognizant of the part played by proper treatment of the drilling fluid in the successful completion of wells.

Until comparatively recently, mud conditioning has been a relatively unimportant phase of operation in this area. Drilling development in most fields until now has been directed mainly to the upper and shallower horizons, down to which no particular formational hazards that require special mud qualities or control usually are encountered. Under such circumstances, the essential function of drilling fluid has been to carry drilling cuttings to the surface and to provide bit lubrication. For this there has been no occasion to use more than plain water with what natural mud is made in the course of drilling.

As yet mud conditioning in this area has not involved some of the complications that are encountered in certain other districts of the country. Except in a few fields, it has not been necessary to contend with high gas pressures. Pressures generally throughout the area are relatively low, and where gas is encountered in substantial volume, pressures have not been abnormal for the depth, as often is the case in such areas as the Gulf Coast. This has made unnecessary the use of heavily weighted muds, thus making it easier to concentrate on controlling other more important qualities in the drilling fluid. Although precautions must be taken for an unexpected emergency, these measures are not particularly complicating.

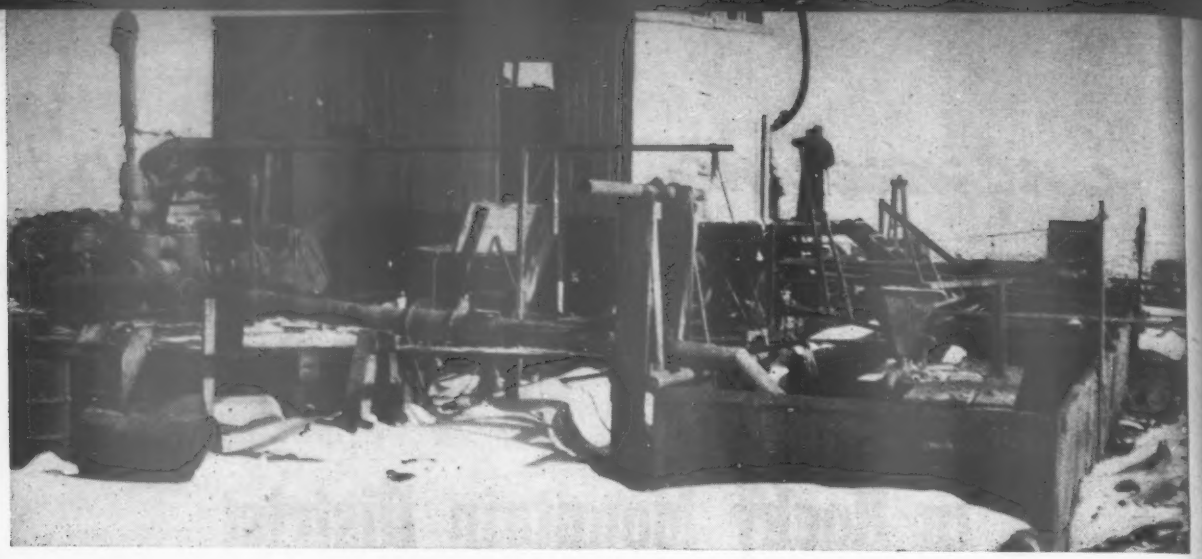


Mud system on large steam rig in Garland field, Wyoming, showing steel pits with gravity flow to pump suction. This rig has two 20-in. pumps. Garland is one of few fields in area having high gas pressures

Mud conditioning is becoming an increasingly important phase of operation in the Rocky Mountain district. Elimination of some of the peculiar hazards being encountered in deeper drilling is being found dependent to a large extent upon the qualities of the drilling fluid used. Practices being developed to insure more effective mud control are discussed in this article, another of a series dealing with operating problems and conditions in this area.

Because of the hard, consolidated formations characteristic of this area, mud conditioning also is not complicated by the necessity for maintaining walls through long, uncased sections of hole as must be done in districts having loose, unconsolidated formations. This, however, does not foreclude the necessity for sealing walls through porous and fractured sections.

Mud conditioning problems in the



Steel mud-pit installation on rig in Oregon Basin field, Wyoming, showing long suction line to single power-driven pump. Mud admixtures are mixed through hopper on top of suction pit

Skid-mounted tank for oil circulated with drilling mud in some Rocky Mountain wells. Tank is transported from well to well as oil is needed.

Rocky Mountain area concerns chiefly the prevention of lost circulation and sticking of drill pipe, two of the chief hazards faced in deeper drilling. Sources of lost circulation are the various porous upper sands which are passed up in the deeper drilling and crevices and fractured sections which may be found at any depth in the lower horizons. The porous upper sands include a number of those that have been or still are productive in many fields. When these sands were developed, loss of circulation in them was not a factor since the holes were completed at their depths, but now that holes are being carried below them to much greater depths they constitute a hazard. Since the use of intermediate protective casing strings is being discontinued as a usual practice, and only short surface pipe is run, these sands remain open until the oil string is run.

The danger of losing returns in these upper sands, as well as in any crevice or fractured section below them, lies in the possibility of sticking of drill pipe. The sticking of pipe in these instances is occasioned by the filtration of the water of the drilling mud into the porous or fractured sections allowing the building up of filter cake and solids on the walls of the hole around the pipe at the point of lost circulation. The accumulated filter cake prevents the pulling of tool joints, or drill collar and bit through it.

Prevention of Lost Returns

Loss of returns calls for loading the mud system with formation sealing materials, building up the viscosity of the mud with colloidal admixtures and decreasing the filtering properties of the mud. Considerable quantities of formation-sealing materials have had to be used in many wells of the district. However, the building up of viscosity of the mud tends to resist the ability of a porous formation to take the mud. At the same time particular emphasis is being placed upon the use of drilling fluids having low water loss. Since the water content of the mud is the part most readily lost in a formation, the reduction in the mud's filtration properties tends to prevent loss of water in some formations that would not take mud solids and thus minimizes the chances of deposition and accumulation of solids and filter cake on the walls around the pipe.

The greatest hazard of stuck drill pipe from loss of circulation arises when a formation does not start taking drilling fluid until after the hole has been carried a considerable depth below it. This happens frequently. When a formation starts taking returns while being drilled the necessary precautions and corrective measures can be taken at the time and trouble averted. However, if the formation does not start taking circulation until sometime after it has been passed up, the operator might not know what formation is causing the trouble, and if the mud is not in proper condition at the time and formation-seeking materials added to the mud do not correct the situation quickly, the pipe could stick before it could be pulled. This hazard has led to more widespread adoption of practices and precautions to insure more adequate control of the mud to keep it in proper condition at all times with a view toward prevention of trouble rather than correction of trouble after it occurs.

Control of water loss of the drilling mud is complicated in this area by the presence of anhydrite and lime. Sections giving the most trouble lie just below the Sundance sand some 700 to 1,000 ft. above the Embar lime and Tensleep sand, two of the main deeper horizons undergoing development. The calcium sulfate of those sections, although not always considered soluble, is taken into solution in the mud and reacts to flocculate inorganic colloids. This is believed to have been one of the principal causes for many cases of stuck drill pipe which have been experienced in deeper drilling, as the

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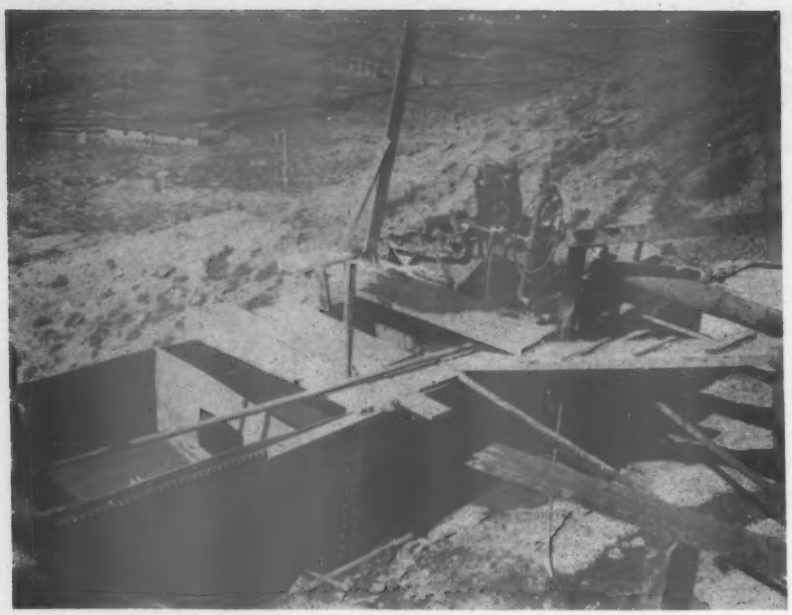


Typical shale-shaker installation on mud return-line discharge to steel settling pit on rig in Elk Basin field, Wyoming. Refuse cuttings are discharged over the side of the hill

free water can readily filtrate into any of the upper porous sands and result in the remaining solids building up a thick filter cake on the walls of the hole around the pipe.

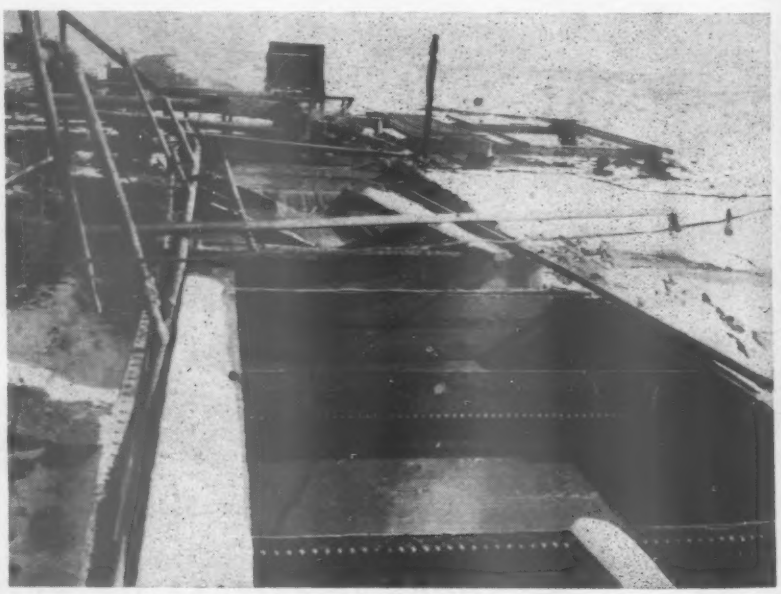
More general use now is being made of organic colloids in the mud while drilling through and below the anhydrite and lime sections. The organic colloids, consisting of a hydrolized starch product, are not as readily flocculated and generally have proven effective in reducing the water filtration. Base of the drilling fluids is fresh water but the pH is usually raised to 12 or higher. In the presence of high pH the organic colloids will not ferment. In many wells, the water loss of muds using only inorganic colloids may exceed 100 cc. at 100-lb. pressure in a filter press for 30 minutes. Use of the organic colloids has reduced the water loss to as low as 2 cc. in many cases.

Another practice followed by a number of operators and contractors while drilling through this anhydrite and the thick section of red beds overlying the deeper producing horizons is to circulate oil with the drilling fluid. This serves to provide lubrication which not only tends to prevent sticking the pipe but assists in freeing the pipe should it become stuck. For this, a portable tank, similar to one shown in an accompanying picture, and containing from 40 to 50 bbl. of oil, usually is provided. The one shown is a half of a cylindrical refinery vessel, cut lengthwise, and mounted horizontally on skids to facilitate moving from well to well as needed. It has a bottom outlet with a pipe connection to the pump section.

One of the few places in which high gas pressures figure in the problem of mud conditioning is at Garland, Big Horn County, Wyoming, one of the Big Horn basin fields, in which active development of the older formations is under way. The gas is found in the Tensleep sand from 3,800 to 4,200 ft., and is passed up in drilling to the oil production zone in the Madison lime at 4,500 to 5,000 ft. Pressures of 2,000 lb. are encountered, and in early development a number of blowouts resulted. Practice now is to start building up the mud weight several hundred feet above the formation. Eleven-pound mud is maintained through and below the Tensleep. In most other fields it usually is not necessary to carry more than 9½ to 10 lb. and no weighting admixtures are needed.

With the greater mud problems, operators and drilling contractors are giving attention to provisions of more complete and adequate facilities for mixing and conditioning the mud. Systems on most wells in the past have been simple and consequently limited in their capacity to adequately condition muds. Usually, they consisted only of a small combination settling and suction pit with possibly a small shale shaker on the mud return ditch for elimination of the larger cuttings. As yet, few rigs have more than one small mud pump which makes it necessary to shut down circulation when the pump is needed to mix mud.

Recently, however, more elaborate mud systems have been provided, including baffled settling pits and separate suction pits, as well as reserve pits for surplus mud for emergency use. Also, additional facilities have been installed for mixing mud and for laboratory testing of the mud conditions. Some of the larger rigs, particularly those operating in fields having high gas pressures, have been equipped with extra mud pumps to prevent shutdowns in emergencies. Increasing use is being made of portable steel tanks for both pits.



Steel mud pit installation showing close-up of baffling system to facilitate settling of undesired cutting. Shale shaker on mud return line discharge is visible at far end

Merry Christmas

More than 250 members of the Hunt Tool Company office, shop and field staffs take this means of extending the Season's Greetings to their thousands of friends throughout the oil fields of the world.

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THE war has made it necessary to get the utmost use out of oil field and refinery equipment. Drillers have been forced to conserve the limited strings available. Casing in old wells has been pulled and used over again. Even complete pipe lines have been dug up and laid down again in more important locations.

All this hard use and re-use of pipe and tubing has focused attention on how all-important is the matter of giving the utmost care and deliberation to "overall" or, "in the long run," economy in the selection of materials.

NATIONAL Seamless is piling up some amazing records. Old customers have told us again and again they are glad they used seamless because of the punishment it can take in these emergency conditions.

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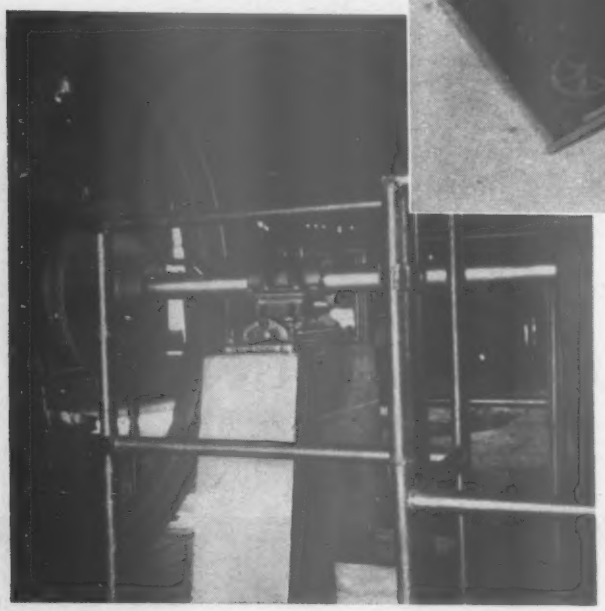
UNITED STATES STEEL

PLANT PRACTICES

Extended Engine Shaft Eliminates Use of Belts

GENERALLY direct-connected machinery is more easily operated but the older type of prime movers in the oil industry was seldom so arranged. The engine shown here has a long shaft centered with the engine crankshaft and connected to the engine's flywheel by means of a flange. This eliminated several belts, a jack shaft, and consequently saved an appreciable amount of the developed engine power.



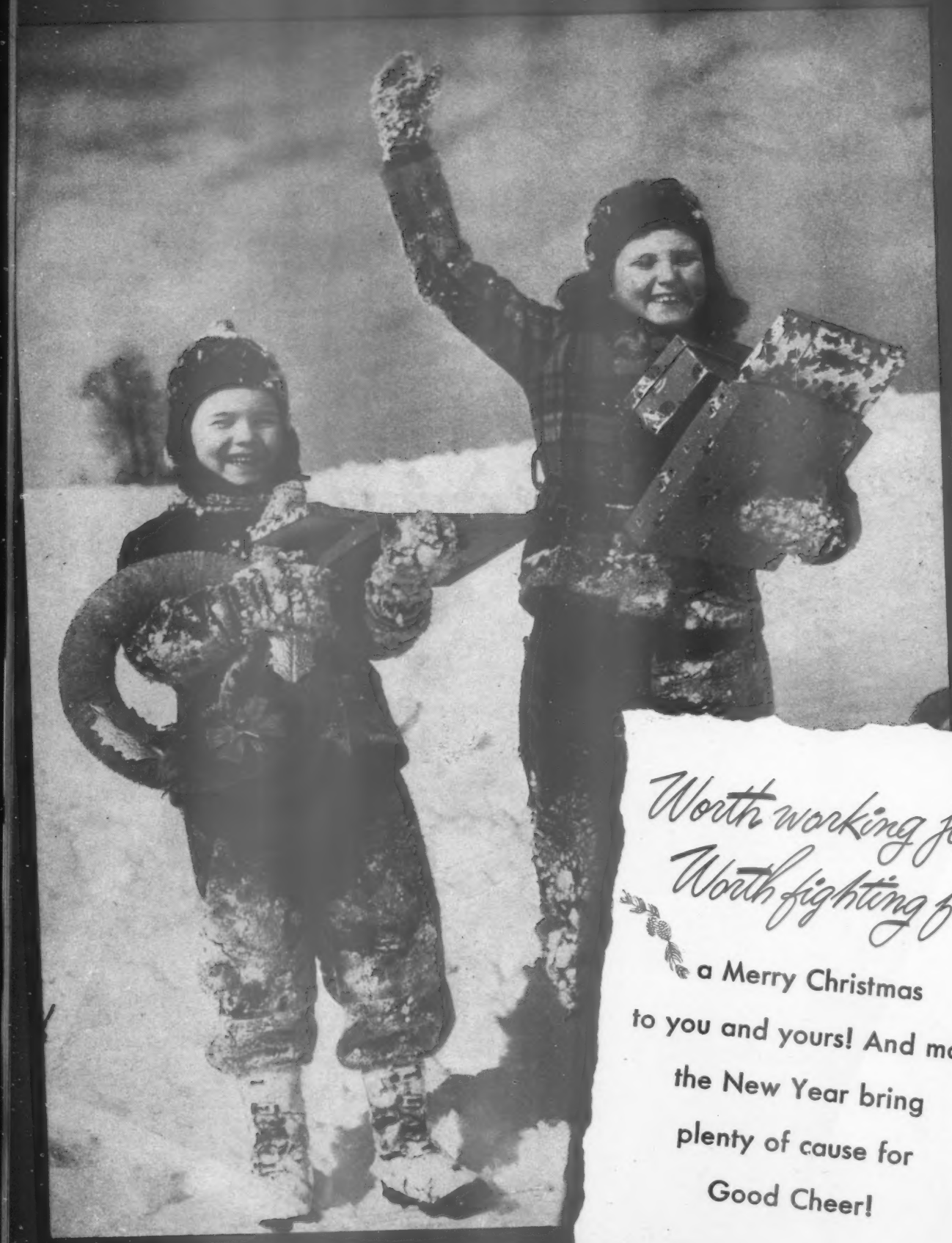
Float-Operated "Howler" For Engine-Water System

A FLOAT-OPERATED "howler" to warn operators when the engine-water sump becomes too full has been devised in a Kansas gasoline plant. Use is made of a discarded kidney float. When the water level in the sump becomes too high, the float contacts with wires of an electrical circuit that causes the howler to function. At the same time, the kidney opens the regulator increasing the flow of water from the circulating pumps. The float is connected to the water sump by a pipe from the pump pit.

Remote Valve Control for Loading Tank Cars

TO provide closer control over loading tank cars, an extension, or remote, control can be attached to the swing between the loading spout and the shutoff. It consists of a simple lever bracketed to the line and connected with a rod to the operating lever, or wrench on the plug stop.

Merry Christmas
from
The Larkins
Bill
John
Jim



Worth working for—
Worth fighting for!

a Merry Christmas
to you and yours! And may
the New Year bring
plenty of cause for
Good Cheer!

OIL WELL SUPPLY COMPANY

New Test Engine Shows Great Flexibility

by Arch L. Foster

To more closely simulate operating conditions for commercial multi-cylinder engines and to attempt to design a basic test engine which can be standardized and reproduced and employed as a standard test unit for evaluating especially lubricating oils under a wide variety of conditions the 90°-V-type twin-cylinder engine discussed here has been designed and is under an intensive test program.

DEVELOPMENT of standardized engines especially for testing lubricating oils has lagged behind the front of engine development purely for testing fuel qualities. This statement applies to both gasoline and diesel types of engines. The well-known CFR test engine for determining anti-knock tendencies of volatile fuels for spark-ignition engines has undergone intense study and development over a period of more than 10 years. Similarly its diesel—compression-ignition—counterpart is well along toward standardization after 7 or 8 years of coordinated research by oil and automotive engineers. This has not been true of engines designed to test the qualities of lubricants under conditions simulating those obtaining in commercial or industrial service.

Recently the research laboratories of the Gulf Oil Corp. undertook the task of designing and developing a relatively simple engine which might be evolved into a general, standardized, basic mechanism for testing either fuels or lubricating oils, but primarily for testing oils. The design work has been carried on under the direction of R. J. S. Pigott, chief engineer; by E. W. Jacobson, design engineer, assisted by H. O. Creazzi and R. P. Jones. Well acquainted with the shortcomings of various engines which have been adapted more or less to the needs of the lubricating oil research situation, the designers of the engine brought out by this laboratory made every effort to avoid the pitfalls and to eliminate or minimize these shortcomings.

Their purpose was to develop a fundamentally sound, scientifically correct engine design which can be the basic unit on which a wide variety of different assemblies of cylinders, heads, and other superstructures may be employed for practically any kind of research that may be desirable. One complete assembly is shown in Fig. 1. This assembly consists of the crankcase and crankshaft units which may be considered the foundation of the test unit, along with accessory equipment necessary to any engine assembly, fitted with two cylinders cooling-jacketed their entire length and with the additional accessories therefor.

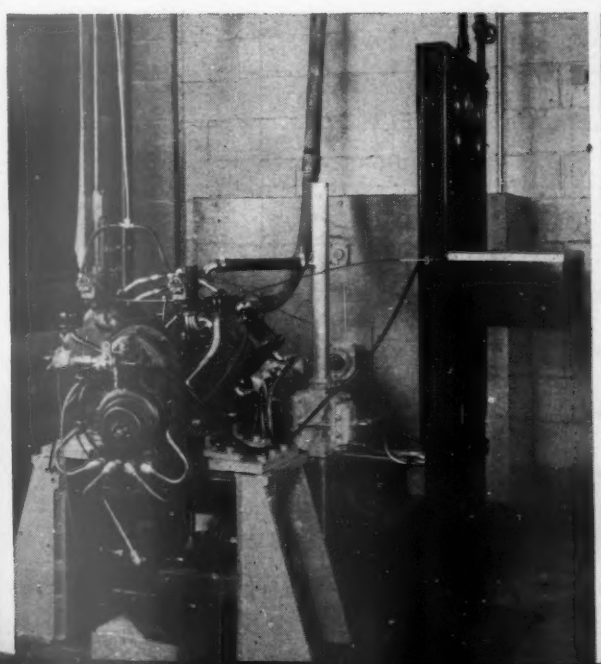
Fundamentally the engine is a 90°-V, two-cylinder arrangement with single throw crankshaft similar to motorcycle design. In planning it, several outstanding departures were made to improve flexibility of operation and to avoid undesirable features found in engines which have been adapted to this test purpose.

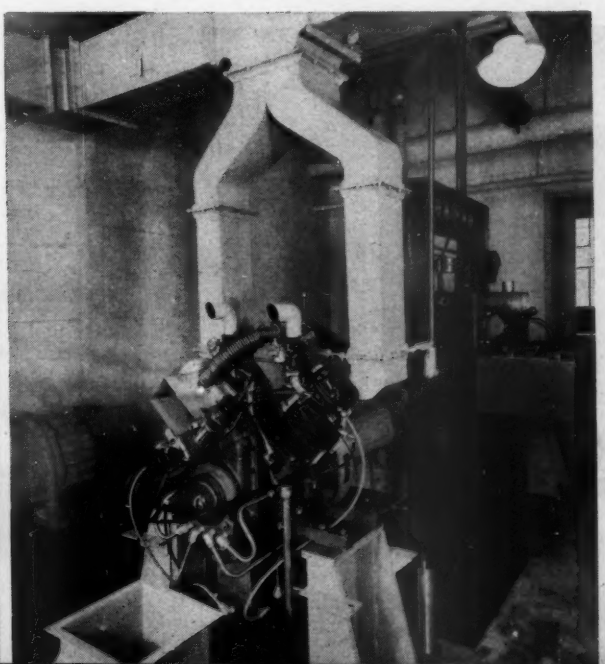
Recovery of Residue Oil

For example; the sump as shown in the illustration is easily and entirely detachable from the crankcase, the few connections to which are easily broken for quick removal of the sump. Both crankcase and sump are designed so that the "hold-up" of oil is negligible, with pockets, corners, etc., eliminated to make oil removal or cleaning easy. The residue of oil from any test run may be recovered with practically no mechanical loss, making for more exact and reproducible test results; simplicity promotes cleaning of the parts easily between test runs.

The crankcase-crankshaft assembly is so constructed that practically any type of cylinder-piston-ignition as-

Fig. 1 (left): Gulf test engine assembly with full-length water-jacketed spark-ignition cylinders, mounted on a raised base which permits easy access to any part of the engine system. Fig. 2 (right): The same Gulf test engine base assembly fitted with Continental airplane-type air-cooled cylinders





sembly may be combined with it. Both spark-ignition and compression-ignition units may be used on this base assembly with good mechanical fit and reproducibility. The cooling jacket extends the entire length of the cylinder in this spark-ignition assembly shown in Fig. 1. The head-cooling circuit may be separated entirely from that of the cylinder walls, permitting independent temperature control with different coolants for these two circuits.

The lubricating system for the cams and timing gears is separate from the crankcase force-feed system. The camshaft compartment may be separated from the timing gear compartment. Either or both systems may be fitted with coolers or heaters to control temperatures independently.

Any kind of sump may be employed, varying the oil volume between any limits. The sump is attached to the case by means of a flat gasket bolted on and with only one permanent service pipe connection. Dry-sump operation is practically as convenient as wet-sump, when an outside oil container is provided; the regular sump may act as scavenger-collector receptacle. Any type of heating or cooling mechanism or method may be used, either temporary or permanent installation in different sumps as the operator chooses. Room is available beneath the cylinders for an oil-collecting gallery so that oil from cylinder walls may be collected separately from the sump oil. Changes in compression ratios and pressures may be effected either by machining off head or cylinder faces, by varying gasket thicknesses or by the shape of the piston head. Cylinder-piston blowby may be separated from valve-stem blowby.

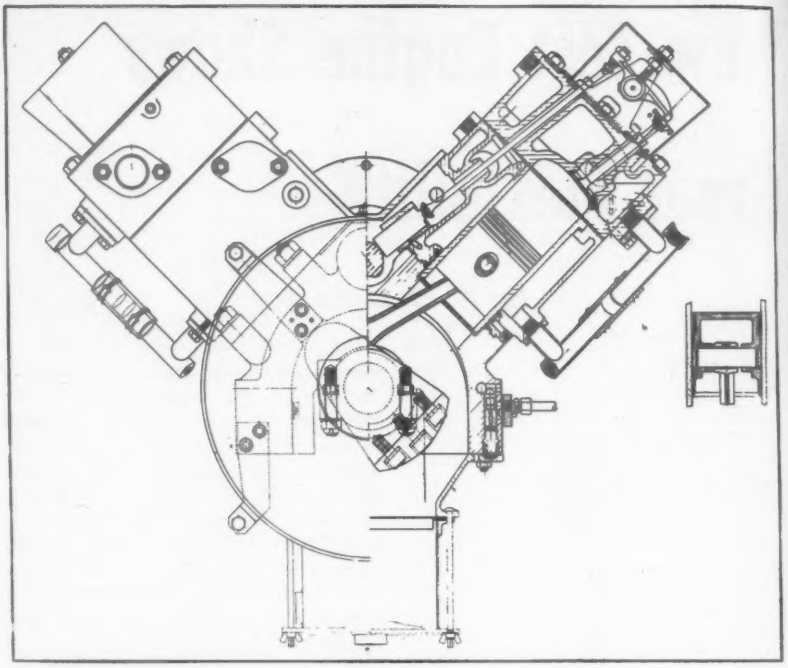


Fig. 4: Transverse section view of valve-in-head assembly on the test engine base unit. This base unit may also be used with diesel type compression-ignition cylinders and accessories for operation as a diesel engine

With two pistons and cylinders the engine will approach much more closely the conditions of commercial multi-cylinder engine operation as to temperatures, radiation and other conditions, fuel system manifolding, etc. Pistons and shaft are counterbalanced and weight variation in these may be properly balanced. One piston may act as a dummy piston riding in its cylinder while work is done by the other piston but without any ignition or valve action in the dummy cylinder. By the system of counterbalancing the use of permanent dummy pistons is avoided. This engine will operate up to speeds of 4,000 r.p.m., whereas the single-cylinder engine such as the Lauson, without dummy piston-balancing cannot go above about 2,500 r.p.m. satisfactorily. With dummy pistons essentially the equivalent of a three-piston engine is had, but with work done in only one cylinder.

In order to increase the general utility of the engine, provision has been made for the removal of one cylinder with all its accessories, to permit operation of the unit as a

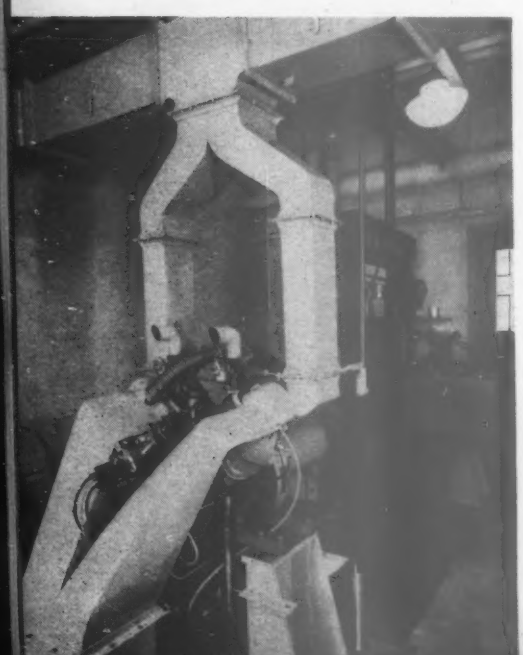


Fig. 3: The test assembly shown in Fig. 2 equipped with cylinder jackets in which air speed, temperature, humidity and other conditions may be controlled to simulate atmospheric flying conditions

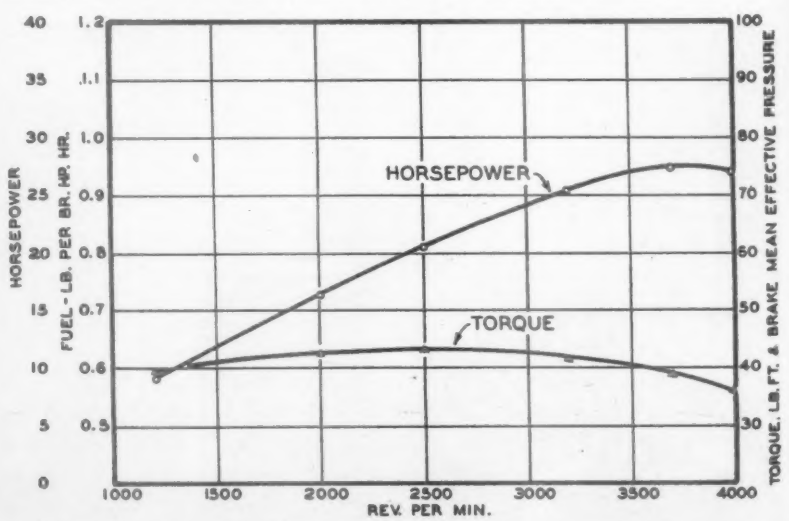


Fig. 5: Typical torque and horsepower curves of test engine using dual carburetors

ALWAYS SMOOTH SLEDDING WITH

AMERICAN *Heavy-Duty*
ROLLER BEARINGS

Spicer Transmissions...

Hauling 155 mm. Howitzers where the action is hottest

The Army Field Artillery's new weapon . . . the M-5 High Speed Tractor, weighing 13 tons and pulling a 7½ ton Howitzer at speeds up to 35 m. p. h. . . . uses a massive Spicer Transmission capable of withstanding the most extreme punishment of battlefront service. This is another example of how Spicer experience and manufacturing facilities met emergency wartime needs. These same facilities for producing Spicer automotive transmissions, universal joints and axles will be ready for immediate peacetime demands when war production has stopped. Spicer Manufacturing Corporation, Toledo, Ohio.

40 YEARS OF SPICER SERVICE

BROWN-LIPE CLUTCHES AND TRANSMISSIONS • SALISBURY FRONT AND REAR AXLES

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single-cylinder engine. This is desirable where results would be complicated by the presence of more than one cylinder, and where operation up to a top of about 2,500 r.p.m. is satisfactory.

As to engine accessory arrangements a shaft is provided for driving fuel pump, fuel injection system, tachometer, and other auxiliary appliances.

To simplify replacement of parts and to reduce costs as well as to simulate commercial engine conditions, this engine is designed to employ Chevrolet, Plymouth, or other standard parts; such as, pistons, connecting rods and rod bearings, main bearings, oil pumps, wristpins, exhaust valves and exhaust valve seat inserts, intake valves, valve springs and locks, valve guides and valve spring retainers, oil relief valve and carburetors.

The engine develops 27 to 30 hp. when fitted to simulate Chevrolet or Plymouth performance. It may be loaded by any type dynamometer which may be desired or available. Two other adaptations of the engine are shown in Figs. 2 and 3. Fig. 2 shows the same engine base fitted with Continental airplane type air-cooled cylinders for testing under conditions simulating aircraft engine operation. Fig. 3 shows a weather-maker arrangement whereby the air temperature, velocity and the conditions surrounding the cylinders may be governed at will within wide limits for the benefit of research. Fig. 4 is a drawing showing essential points in the design of the basic engine.

As has been indicated earlier, one main purpose of this twin-cylinder engine is to provide means to reproduce at will, all or only a few of the operating conditions in the multi-cylinder commercial engine while other test conditions are controlled as required, namely, conditions of temperature, radiation, heating surface, piston speeds, fuel distribution, manifold pressures, mechanical fits, and other variables peculiar to multi-cylinder engines in practical use. The engine is designed sufficiently so that full use of supercharging may be made to attain high piston and cylinder wall temperatures, as well as high bearing loads at aircraft piston speeds.

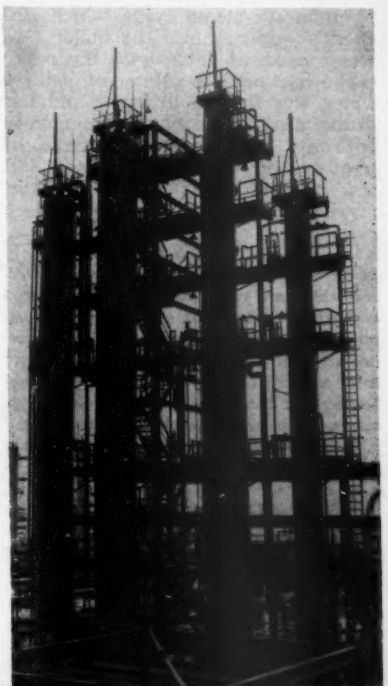
One of the serious drawbacks of the past and in the present as well, in research on and in testing lubricating oils, is the inability to compare results on the same oils in different engines, and the lack of correlation of these data when obtained in different laboratories. The Gulf Test Engine was designed and is being built for use inside the Gulf Research Laboratory. It is planned to be a part of a completely integrated set of laboratory test engines, where complete flexibility starting with preliminary testing, on through specific condition testing, and ending in final testing in full-scale engines is achieved. It seems possible that the Gulf test engine may eventually prove to be the basis upon which more standardized design may be developed which will result in a standard test unit, and in procedures which will give the oil and automotive industries a suitable basis for comparison of values in their research on lubrication and lubricating oils.

Fractionator Built Partly From Scrap Steel in Gulf Shop

AN accompanying illustration shows a 3½ by 5½ by 94-ft. depropanizer tower, needed in one of the war-emergency units at Gulf Refining Corp.'s Port Arthur, Tex., plant, as it looked when completely fabricated in the refinery shops and ready for stress-relieving, and X-ray checking.

The tower shell was built of new sheet to the dimensions given. The bubble decks and their auxiliary equipment are new, the remainder of the job entirely used material. Because of the relatively huge size of the tower, it was decided to stress-relieve it in the company's own furnace. This furnace can handle objects up to 25 ft. in length and 10 ft. in diameter. To accommodate this tower, a special railroad track was built from the nearest spur in the refinery to the back wall of the furnace. This back wall of brick was knocked out to make an opening large enough to admit the tower for about one-fourth of its length, the tower passed into the furnace, and the opening around it where it extended beyond the furnace was "bricked up" to close off the heating space. When the second section of the tower was to be heated, it necessitated raising the entrance door on the opposite side, and "bricking up" around the tower in a similar manner.

Four heats were required, calling for day-and-night operation of the furnace by its three-shift crew to complete the job. The 55-ton tower was completed and installed in its place 2 months ahead of the original schedule which contemplated its fabrication in a regular shop in competition with other war-emergency equipment.

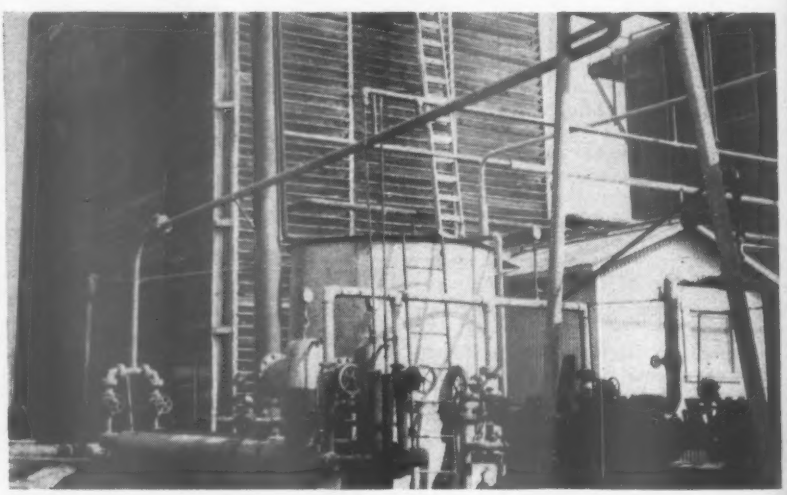


Below: Fractionator tower 94 ft. high, fabricated in Gulf shops, partly from scrap steel. Right: The 94-ft. fractionator (second from right) in service

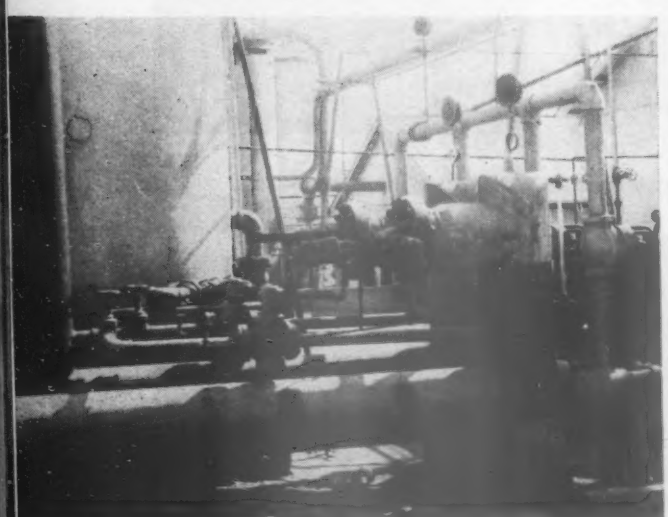
Still Preheater Control, Boiler Feed-Water Heaters Combined in Natural-Gasoline Plant

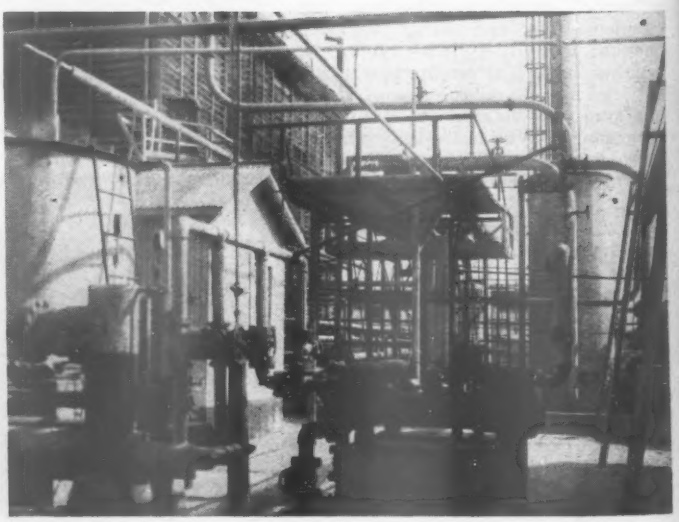
UTILIZATION of waste heat is being accomplished by a large natural-gasoline plant, which produces important amounts of LPG and isobutane, by combining the operation of condensate controllers on the outlet of the still absorption oil preheaters with the boiler feed-water preheaters. Prior to the construction of this combined unit, the waste water from the outlet of the still absorption-oil preheaters was controlled by separate steam traps which discharged directly into the boiler feed water make-up tank, with the result that a considerable volume of distilled water was flashed to vapor and lost in the air. The loss of this commodity not only increased the expense of treating the boiler feed water, but also increased the amount of water purchased.

With a small outlay for new fittings, it was possible to salvage sufficient equipment and pipe from idle stocks of material to enable the plant welder to construct a satisfactory still preheater condensate trap, and boiler feed-water heater as a combination unit. The projected unit was built in twin form, both exactly alike, so that, if an emergency is encountered, one may be operated while the other is down for repairs. The design of the units requires a standard joint of 12-in. pipe for each section to form the outer shell. Four joints of 1¼-in. pipe were obtained as the tube bundle for the individual section, which were welded to tube sheets carried inside nipples of 6-in. pipe to attach to each end of the 12-in. shell. Along with these four joints of small pipe, another joint of 1¼-in. pipe was welded into the short nipple extending through the inlet tube sheet, but discharging freely into the outer shell near the outlet tube sheet of the tube bundle of four joints of small pipe. The bundle of four small diameter pipes was designed to convey the boiler feed water through the outer



Right: Tube and shell boiler feed-water heaters which are made of salvaged pipe and improvised water-level controllers to maintain adequate heating with steam in still preheaters and to control the temperature of feed water. Left, below: Improvised preheaters for boiler feed water utilizing discharge from still preheaters to elevate the temperature and which pass condensate from preheaters into standpipe at extreme left to make-up tank immediately behind. Right, below: Gasoline plant distillation equipment with still preheaters in distance above platform which are controlled with boiler feed-water preheaters at lower left.





Seasons Greetings

Christmas 1943

To Our Friends Everywhere:

The return of Christmas year after year is a welcome and warming experience.

The star that guided the shepherds and the wise men has become a symbol without which no Christmas is complete. Their search symbolizes man's search for the noble and the exalted.

This Christmas may we find safe refuge from the dark tumult of our times by lifting our hopes to the stars, certain in the knowledge that the day is rapidly approaching when the song of the angels, "Peace on earth, good will to men", will echo and re-echo around the world.

It is the wish of WECO that Christmas for you this year will take on new and richer meaning, and that it will truly be a holy day, rather than simply a holiday.

Sincerely,

WELL EQUIPMENT MFG. CORP.

C. K. Stillwagon

C. K. Stillwagon, Pres.

In keeping

with an old National custom

To our friends in the Armed Forces and at home, we wish you a very

Merry Christmas

The
National Supply Company

Oil Field Equipment and Machinery

SUPERIOR ENGINES • SPANG PIPE

shell, while the open end joint of 1¼-in. pipe was designed to handle the condensate from the still absorption oil preheaters.

The controllers which maintain a flooded level of still preheater condensate over the boiler feed-water tubes are set in short risers of 12-in. pipe, welded directly to the outer shells near the inlet end. These level controllers are the type which work inside a vessel through a packed stuffing box in a flanged member bolted to a manhole opening. Water level in the float chambers, or risers at the end of the shells is observed by conventional gage glasses. The discharge of water from the float chambers is through 2-in. pipe attached to the risers immediately below the manholes, governed by float-operated outlet valves connected by conventional links and clevises.

The water condensed from the steam flowing through the still absorption oil preheaters leaves these shell-and-tube units through the original outlet which is attached to the steam traps for previous operation. The condensate is led through an overhead 1-in. line, supported by brackets on the process line posts, to the new combination units at the boiler feed pumps. Separate risers drop from this line to the inlet of the free-end 1¼-in. internal line, each controlled by a globe valve for shutting off when necessary. The water, and uncondensed steam if any, passes into the tube sheet through the conductor line, paralleling the tube bundle of four 1¼-in. boiler feed-water heating pipes, and forced to flow back to the inlet end where it rises into the float chambers and released through the float controlled outlet valves. This type of operation combines both parallel flow of the heating water with counter flow.

Condensate controlled by the float valves passes through 2-in. lines connected to a bootleg, which is a vertical joint of 8-in. pipe, setting between the units with its discharge leading to the boiler feed-water make-up tank nearby. As the condensate passes through the various piping, preheater shell and outlet valves, the temperature is reduced below the vaporization point, so that, when it is finally released into the boiler feed-water make-up tank, none of it is lost by rapid evaporation.

The boiler feed-water pumps take suction on this tank, which is kept full by a float controlled valve on the make-up line, and discharges through either of the feed-water heaters which may be on the line. The outlet from both units connect to a common line which leads to the battery of boilers a short distance away. Since the water level in the outer shell is maintained at the desired height by the inside float, there is little for the plant operator to worry about. The still absorption-oil preheaters operate at the peak temperature obtained by the steam from the boilers, and the condensate is made available for reuse in the boilers without waste.

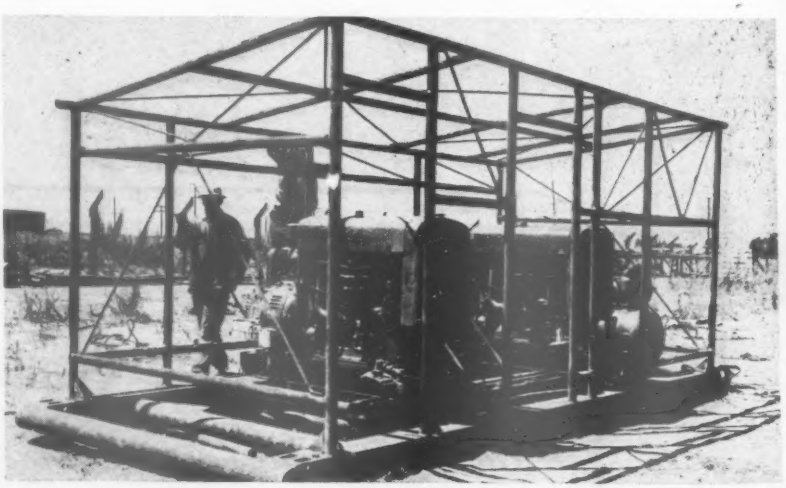
Foundation and Housing for Unitized Generator Sets

THE protection of vital equipment on a drilling rig is most important at this time since many parts of necessary units cannot easily be replaced. Therefore, a large integrated company which has strings of tools working in widely separated areas planned a uniform setting with housing facilities for the electric generating sets employed at the drilling wells.

The foundation for the sets is supplied by salvaging discarded boiler skid-type base, while all of the construction material and parts employed for the unit housing are obtained from junk and discarded equipment. While the junk pile is quite small because of a continuous flow of scrap to steel mills, a careful sorting of discarded material can usually supply the necessary pipe and sucker rods. The studs, rafters and crossmembers are fashioned from 2-in. pipe cleaned and straightened, all of which is welded at the points of contact with gussets at the base of the studding which serve as corner posts. The siding and roof are reconditioned corrugated galvanized iron, frequently reshaped in the field with a set of forms and a wood hand maul. If convenient, the broken and distorted sheets are reshaped at a central shop on a machine improvised from other units so that a badly deformed section fed between rollers emerges in approximately the same condition as when new.

The gas or gasoline-engine-driven generating sets have the conventional skid-type bases so that they, perhaps may be used singly and various other settings, and require only hold-down lugs welded to the crossmembers of the discarded boiler foundation to hold them rigidly in place. When the building plans were drawn, sketches were made to indicate to the construction welder where certain openings were to be provided for between the studding. One single large door for employe entrance is built into the high side of the lean-to-type building, located between the two generating sets with the shutter hanging on conventional strap hinges.

When it is necessary to replace or remove an entire set access it provided by auxiliary openings directly in front of the radiator of the engine through which the set with its skid base can be withdrawn easily. These openings are closed by a dowel-pin arrangement where the side members of the shutter are set into holes drilled in the side sills of the boiler foundation improvised as a complete generating base. The corrugated siding, cover for door shutters and for the roof are applied directly to the 2-in. piping and attached by passing common wire nails through holes subsequently bent enough to retain the sheets in place. The entire structure is carefully welded and sway-braced for safety in loading.



Studding of auxiliary equipment house arranged so that engines and generators may be removed by detaching a section of corrugated iron wall

Front Lines in

REFINING

by Arch L. Foster

A Hundred Million Tons Of Floating Fuel

SUSPENSION or "flotation" of 100 million tons of waste coal in residual fuel oils may help solve the heavy oil shortage and the economic disposal and utilization of this tremendous amount of otherwise wasted solid fuel. So fuel and power engineers were told in New York recently, and this position is borne out by other information made public over recent years from other authoritative sources; this coal waste in Pennsylvania alone, it is said.

Reduced to technical terms a colloidal fuel is formed by the suspension of extremely finely divided coal, 200-mesh or finer, in heavy fuel oil, under such conditions that the entire mass may be pumped to and burned in specially fitted burners as is any entirely liquid fuel. The new plants for preparing these fuels are going into production immediately, one rated to increase the output of an Ohio steel mill by 10 per cent, says John V. Pyle, manager of the Kennedy-Saun Co. of New York. This company has developed commercially successful methods for making these two-phase fuels.

In Britain such fuels are already being supplied in large quantities to sea-going ships, to locomotives and power plants, Details of how the finely pulverized coal is maintained in suspension even in heavy oil are somewhat vague; it is presumed that some colloidizing agent is employed, probably in small percentages, which forms a relatively stable fuel mixture.

Such a system offers definite advantages when we consider the prospect of reduced supplies of crude petroleum, and the consequent necessity for utilizing every portion of the available crude for its most economical purpose. J. August Kessler, head of the Shell interests, urged many years ago that the consumption of so premium a material as petroleum in the form of so uneconomic a product as heavy fuel oil be reduced to the irreducible minimum, and presented apparently unanswerable arguments in support of this contention. He listed the use of heavy fuel oil for its present purpose of heating boilers as a subnormal use of premium material and urged the oil industry to get out of the heavy fuel heating business where it competes with coal.

Now, maybe both purposes can be served by the use of heavy fuel oil, itself too heavy laden with carbonaceous material to be of much use for any other purpose, as a carrier to fluidize solid coal and thus to obtain the advantages of a cheap solid fuel and an easily handled liquid fuel in the same breath; to utilize the heaviest oils and waste coal in a manner which will be both economically and technically efficient.

"Chemicals Deferred"

ONE of the primary avenues of technical attack on the whole field of hydrocarbon chemistry and of chemistry based on hydrocarbon raw materials is the tremendous number of intermediate products, suitable for chemical manufacture or for use per se, obtainable by the action of even now well-known catalysts and families of catalyst. It is not too much to say that if the first third of the twentieth century was the Coal Tar Age in chemistry, the next third at least will be the Age of Chemistry of Petroleum. Witness the changes which can be made in molecular weight and/or molecular structure which is made possible by catalytic conversion.

Normal hexane can be isomerized by satisfactory known means to form five different isohexanes, each differing in its properties and reactivities. These five in turn may be nitrated, sulfonated, hydrated, chlorinated, oxidized and reacted in any number of ways. Mono-, di-, tri- and poly-substituted derivatives can be made, giving the chemical manufacturer a literally inexhaustible list of variants with which to research. And this is only one of tens of thousands of hydrocarbons. The possibilities are well nigh limitless.

The matter of merely synthesizing these compounds and determining their reactions, properties and suitabilities will require thousands of man-years of research work. This work is necessary before application of these derivatives to commercial and industrial product manufacture can be undertaken with intelligence. Of necessity this painstaking study of the entire field cannot be carried out without primary consideration being given to practicability. Much of it will be done by practical-minded researchers in colleges and universities who will go further than the mere synthesis and determination of the orthodox list of physical properties. Investigation of properties which are important industrially and commercially, and following that the development of practical synthesis methods for large-scale production are the more important jobs.

One of the greatest of these fields is that of polymerization of oleofins and polyolefins, and the application of these hydrocarbons to the plastics industry. What the outcome of plastics research will be cannot be foretold, but the likely extent of its ramifications staggers the imagination.

The organic chemist and the chemical engineer can have no grounds for complaint of an exhausted field for development.

Glass Packing for Towers

ANOTHER pinch-hitter in the critical equipment field, which shows some possibilities of permanency in its adopted "profession" is fiber glass. Replacing tinned copper bubble plates is alcohol - concentrating columns, making alcohol for synthetic-rubber intermediates, experimenters have passed as much as 1,200 lb. of alcohol-water feed per hour per square foot of cross sectional area through 11¼-in. diameter columns ranging from 1.5 ft. to 6.5 ft. in length. The towers were packed with 20-in. lengths of glass fiber 0.0098 in. in diameter. Through the smaller column, in which 153 sq. ft. of packing material surface was placed, and the larger in which 580 sq. ft. of packing was forced, vapor mass velocities up to 5 ft. per second were obtained. With the low pressure drop recorded even at the higher rates it is obvious that higher rates may be employed.

Pressure of war demands induced plant operators to use glass fiber for large-scale plants before research work was completed. Superficial vapor velocities up to 6 ft. are being used continuously and alcohol of the required high concentration is being made in large quantities by these plants. The research work is under the direction of Dr. J. H. Koffolt, Ohio State University, and his colleagues, Drs. J. R. Withrow and G. W. Minard.

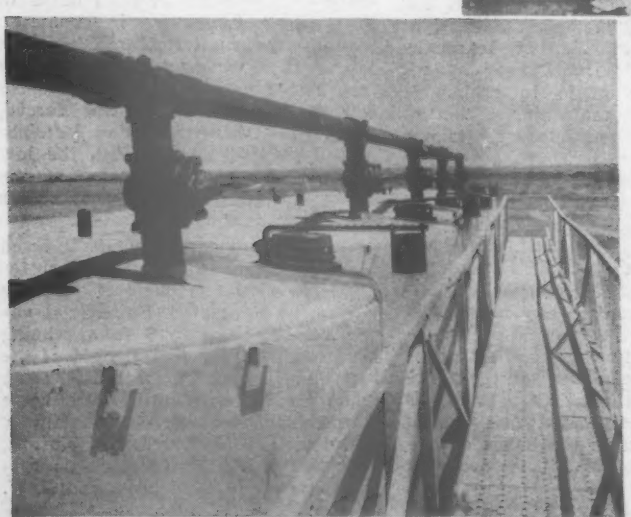
OPERATING IDEAS

Portable Testing Separator

PRODUCTIVITY of wells must be determined during completion if the best results are to be obtained. This requires the installation of either permanent or temporary separation and tankage facilities. In this particular field the operator uses central separator and tank-battery installations and consequently there are no separators or tanks at the well site. For testing purposes this company uses the portable separator shown and a tank mounted on skids. The separator is mounted in the cradle and can be tipped over and laid on its side for moving. A mechanically balanced control is used for regulating the flow from the separator. All the fittings remain on the separator while moving.

Work Bench and Small Parts Skid

A COMBINATION work bench and skid unit for the collection and moving of small equipment parts and fittings has been provided by a drilling contractor in the Rocky Mountain district. The frame is constructed of discarded pipe as shown in the accompanying picture. Small parts and fittings are carried in a long wooden box which fits through and rests on the base members of the frame. Heavy planks laid across the top crossmembers form the bench. A vise is permanently mounted on one end post.



Dead-weight Relief Valves

AN ingenious method for providing a relief valve to hold a pressure on lease stock tanks is shown in the accompanying picture. The device includes a bar made from sucker rods. This has a right angle and an eye on one end so that the hingle pin of the hatch can be inserted through it. The bar thus can be dropped across the thief hatch although it can move independently of the hatch. Small pots with eyes on each side of the top are placed over the rods. To adjust the back pressure to the desired amount it is only necessary to slide the pots back and forth or to add or remove weights from them. In case the pressure becomes in excess of the desired amount the hatch will be lifted enough to allow gas to escape from the tank.

The Future

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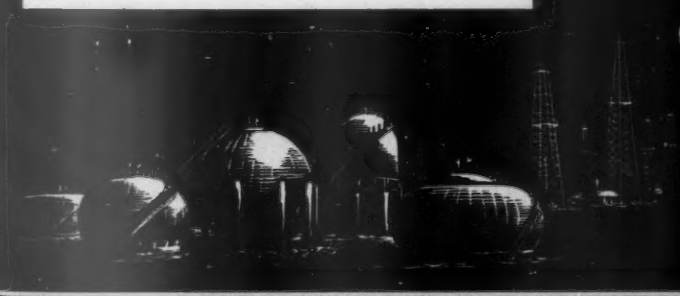


SHAND & JURS

Rate-of-Flow Chart Devised for Natural-Gas Pipe Lines

*by George W. Carpenter**

SEVERAL methods of rapid translation of readings of differential and static pressures from an orifice meter into rates of flow have been devised by field men, but these methods usually involve complicated mental calculations and are of limited accuracy. The accompanying chart has been especially prepared to facilitate rapid and reasonably accurate determination of rate of flow.

The basic formula of orifice-meter flow is $Q = C\sqrt{hP}$, where Q is the quantity of gas flowing through the orifice in 1,000 cu. ft. per hour or per 24 hours; h is the differential pressure on the orifice meter in inches of water; P is the static pressure on the orifice meter in pounds per square inch absolute; and C is the orifice coefficient, a factor which reflects the effect of the size of the orifice, the size of the meter run, base pressure, base temperature, flowing temperature, and gravity of gas.

All of these variables except flowing temperature are provided for on the chart. Straight lines, representing static pressures and orifice sizes, are plotted on logarithmic paper. Proper allowance for absolute pressures has been made in the static-pressure lines, and it is therefore unnecessary to convert from the observed static pressure to absolute static pressure in the use of the chart. Corrections for the desired pressure base and the gravity of the flowing gas are easily made along the right side of the chart. Inasmuch as the corrections for the most flowing temperatures are negligible, no allowance for them was provided in the chart.

The following examples will illustrate the use of the chart:

Example A.—Differential pressure, 10 in.; static pressure, 50 lb. per sq. in. gage; orifice size, 1 in.; gravity of gas, 0.60; pressure base, 8 oz.

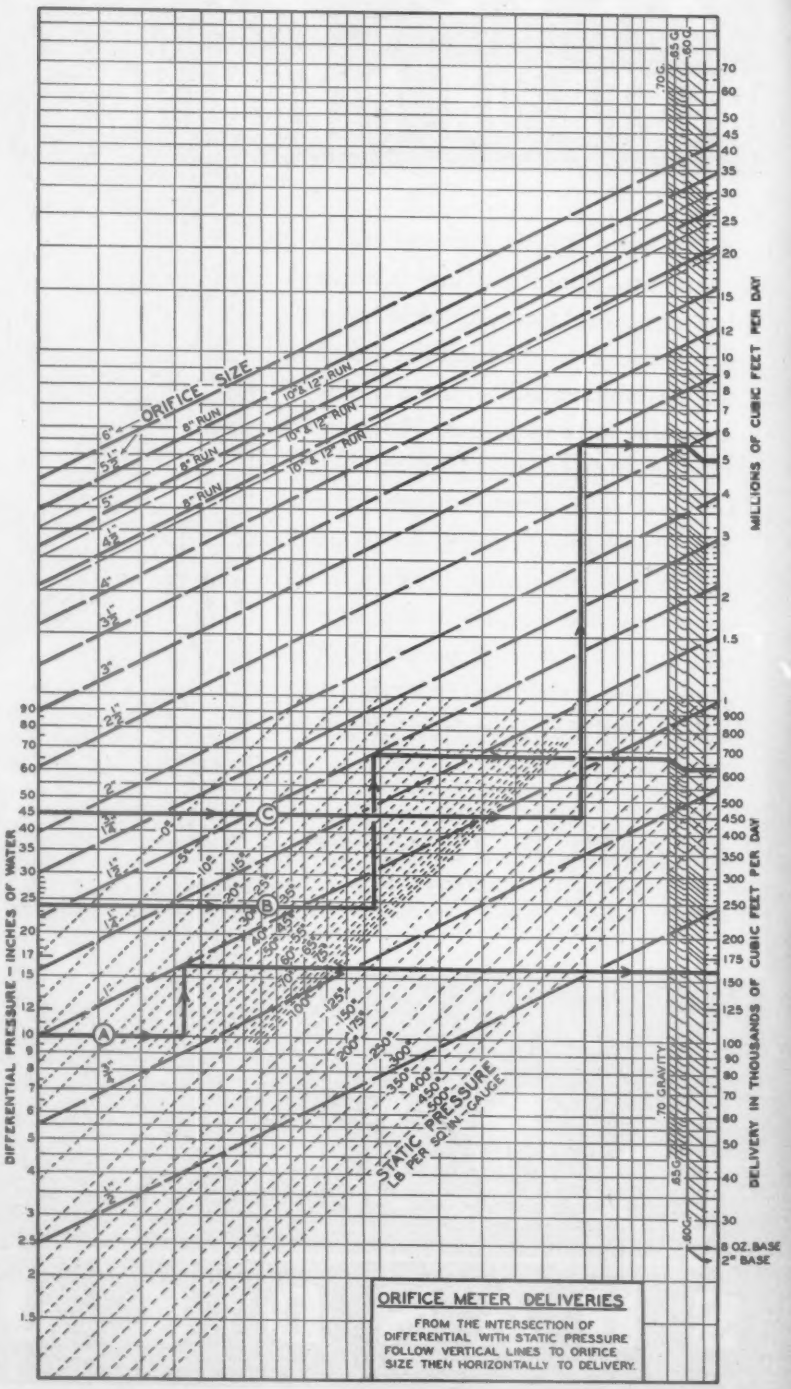
Rate of flow—160,000 cu. ft. per day.

Example B.—Differential pressure, 24 in.; static pressure, 80 lb. per sq. in. gage; orifice size, 1½ in.; gravity of gas, 0.70; pressure base, 8 oz.

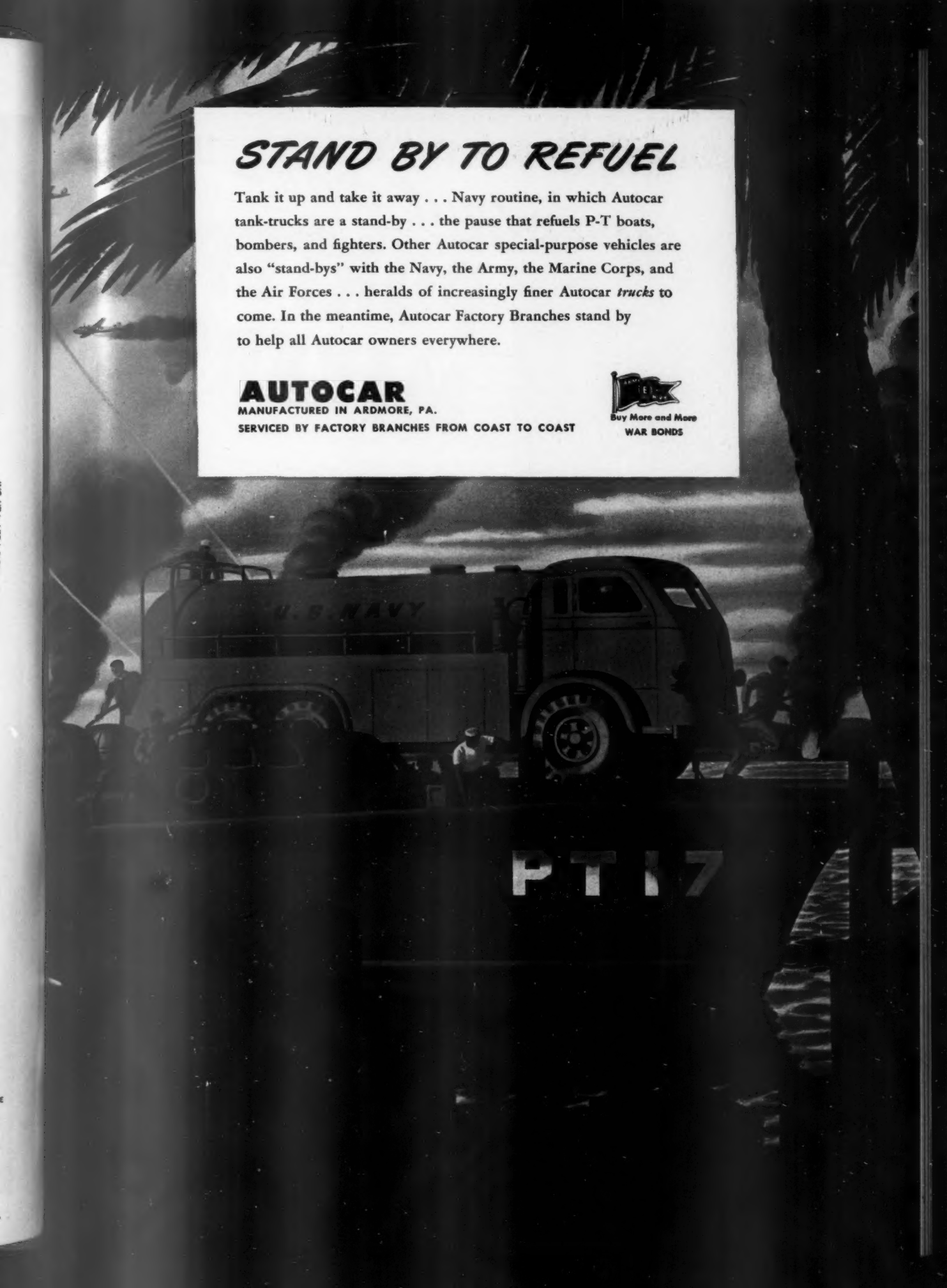
Rate of flow—630,000 cu. ft. per day.

Example C.—Differential pressure, 45 in.; static pressure, 200 lb. per sq. in. gage; orifice size, 3 in.; gravity of gas, 0.60; pressure base, 2 lb.

Rate of flow—5,000,000 cu. ft. per day.


ORIFICE SIZE
6" RUN
8" RUN
10" & 12" RUN
DIFFERENTIAL PRESSURE — INCHES OF WATER
STATIC PRESSURE LB PER SQ.IN.-GAUGE
MILLIONS OF CUBIC FEET PER DAY
DELIVERY IN THOUSANDS OF CUBIC FEET PER DAY
.70 GRAVITY
.85 G.
.60 G.
8 OZ. BASE
2" BASE
ORIFICE METER DELIVERIES
FROM THE INTERSECTION OF DIFFERENTIAL WITH STATIC PRESSURE FOLLOW VERTICAL LINES TO ORIFICE SIZE THEN HORIZONTALLY TO DELIVERY.

*Oklahoma Natural Gas Co.



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Cleaning Program for Used Equipment Boosts Efficiency of Plant

*by Roland Lough**

In this article, a clear-cut distinction is made between on-the-line maintenance of equipment preparatory to immediate reuse in the same location, and salvaging for ultimate use. Because of its special timeliness, only the latter work is discussed here.

BEFORE a salvage department can function successfully, an estimate of the type, size and volume of scrap, and provision for handling the reclaimable parts, must be made. Such a preliminary step lays the groundwork for an efficient and orderly run scrap-salvage program.

An organized plan should be followed for sorting the various materials, i.e., keeping brass, copper, nickel, different grades of steel, etc., separated from one another, and for removing oil, grease and dirt from them. Rather than complicating the scrap-salvage setup, this procedure actually simplifies and speeds the work and produces higher returns. Segregation importantly aids the degreasing or cleaning process since it is generally necessary to clean ferrous and nonferrous items separately. Nonmetallic items, too, such as corks, oil filter bags, wiping cloths, cotton waste, etc. require individual handling for best results.

Whether or not dirty parts can be salvaged should not be left to the eye alone. Frequently grease and muck obscure from sight the true condition of a part. Cleaning it first will help dispel doubts and indicate with more certainty whether reclamation is possible.

*Technical service department, Oakite Products, Inc.

Quick Tests for Identifying Metals

Methods for distinguishing between the different metals and alloys are many. They identify each type as accurately as a fingerprint spots a man.

The spark test. — Spark testing is one of the simplest. Using a high-speed power grinder, hold the specimen so sparks will fly horizontally. For each type of metal the color, shape and size of sparks will vary and thereby provide an accurate means of distinguishing one metal from another. Examination of sparks

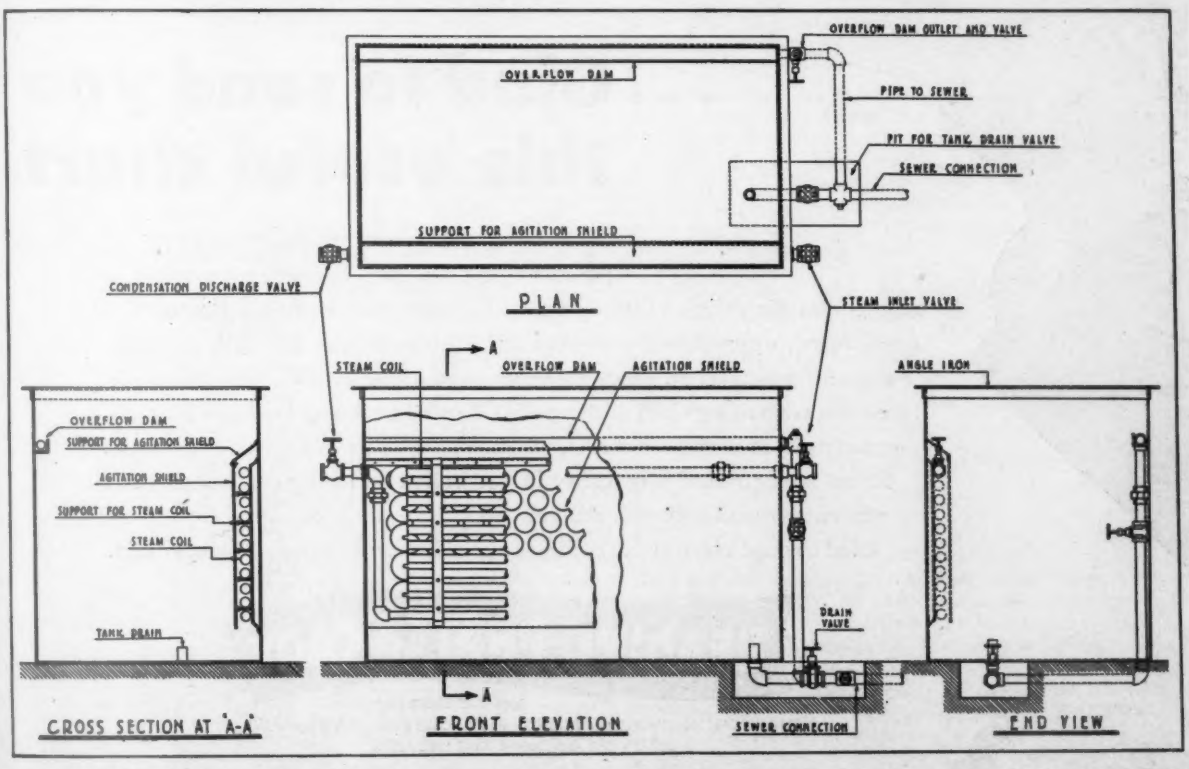
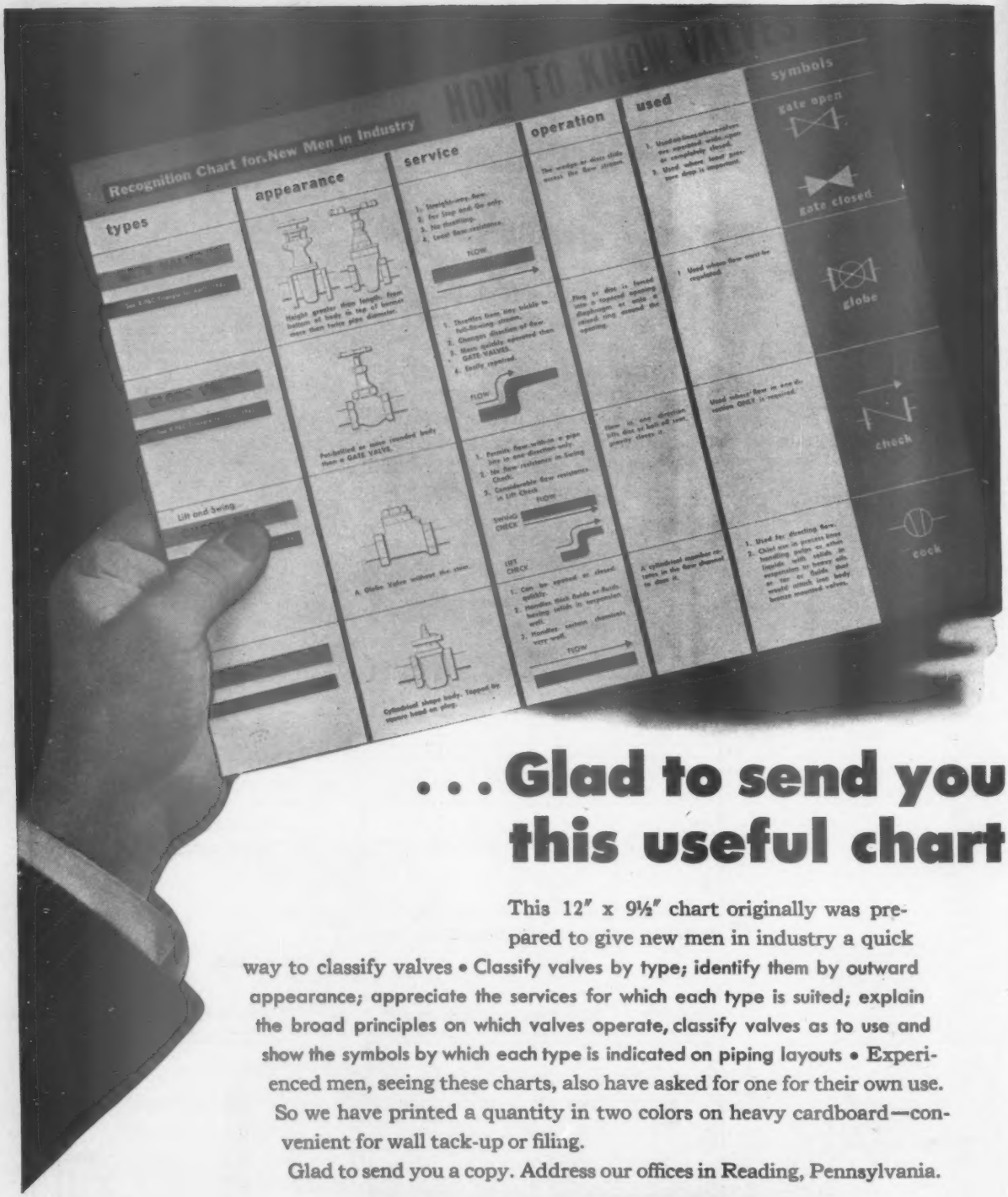


Fig. 1: Plan for cleaning tank heated by steam. Actual dimensions are not shown on this drawing since capacity of the tank depends largely on the volume of the work and the sizes of the individual pieces to be handled. Construction details are included in the accompanying text



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can best be made against a dark background. If a chart showing characteristic sparks of different metals is not on hand, begin by observing the sparks of a known specimen and matching "unknowns" with it. The spark stream should be taken from an area that is not carburized, decarburized or heavily scaled.

Other tests are appearance, blowpipe, magnetic, nitric acid, copper test with iron nail, and drop test with cupric chloride solution. These tests have been well publicized of late and need no further elaboration. When one of these tests gives insufficient evidence as to the type of metal under examination, some of the others may be employed to supplement it. For example, if in the nitric acid test the acid dropped on the surface turns green or blue, follow up with the nail test.

Tested Cleaning Techniques

Ease and speed of cleaning is important particularly in this period of manpower shortage. Therefore, mechanical methods of cleaning requiring considerable hand labor are more of a problem than an aid under today's conditions. Chemical methods prove quicker and more effective, especially in reaching remote areas of parts. No elaborate equipment is necessary in the chemical cleaning method. An open solution-holding tank is the main requirement. One of 200 to 400 gal. may be all that is needed. In many cases a tank of 500 to 1,000-gal. capacity will be more appropriate. As has been indicated earlier, brass, copper and other nonferrous items may require one degreasing tank; the ferrous type another. A tank for rinsing following degreasing is also essential

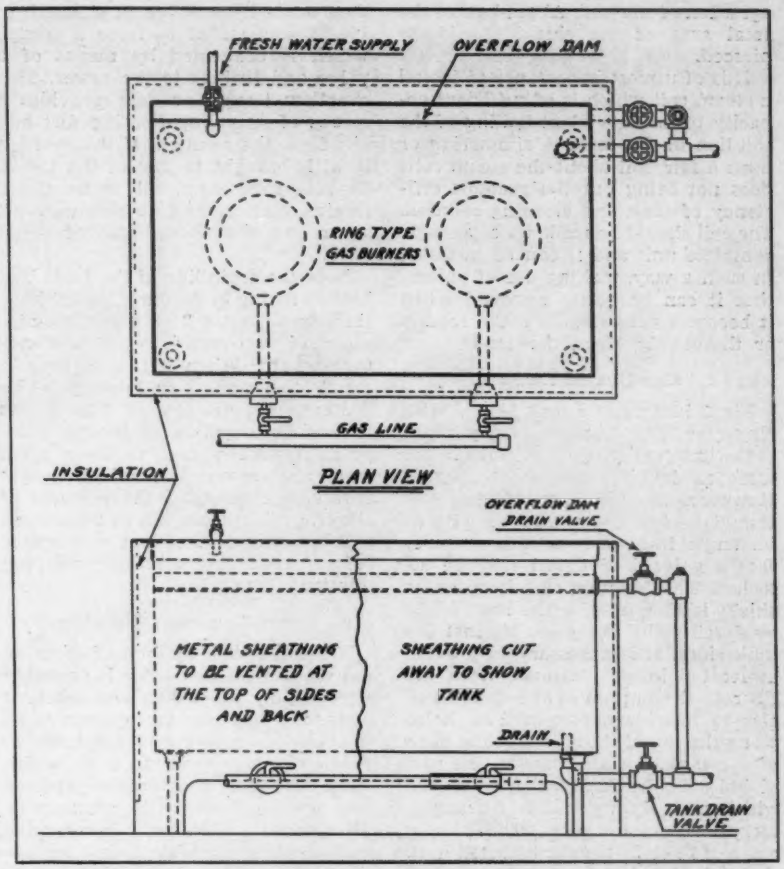

Fig. 2: When steam is not available, a tank heated by open-flame type burners makes a good parts-cleaning installation. Specifications are given in article

equipment although in some salvage department setups, the rinsing of parts is accomplished by a pressure hose rinse instead of a tank rinse.

Heating Solution Tanks

An important factor in operating both degreasing and rinsing tanks is heat because in large measure speed and effectiveness of cleaning is dependent on it. Open steam lines dilute the cleaning solution and add unnecessarily to cost because more upkeep material is required to maintain proper concentration of the cleaning solution. To hold work suspended in the solution, baskets, racks, hooks, hoists, chain, and wire are commonly used. Agitation of either the work or of the cleaning solution is usually desirable and in some instances necessary, especially on pieces of work that tend to nest together or that have recessed parts where the matter to be removed becomes imbedded. Agitation may be provided in several ways. The simplest way is that of vigorously boiling the solution. Bubbling of compressed air or live steam through the solution is also used.

While size is optional, the tank should be made large enough to be able to clean the biggest parts handled at the shop and of such size as to enable a sufficient number of average-sized parts to be cleaned simultaneously. Table 1 shows the capacity of the tank needed.

Fig. 1 illustrates a typical tank for use in salvage cleaning. Tanks of this type should be constructed of hot rolled steel, the gage depending upon the size. For tanks up to 100-gal. capacity, 12-gage sheet metal may be employed; up to 500 gal., 10-gage, and over 500 gal., 7-gage metal should be used. All seams should be welded both inside and out.

How to Place Steam Coils

The steam coils should be fitted against the front side of the tank, that is, on the side of the tank nearest the operator who handles the parts to be cleaned and the overflow dam should be on the far side of the tank. The reason for this is that the surge of the boiling solution will tend to drive any floating oil or dirt across the tank to the dam; thus the surface of the solution nearest the operator is always comparatively clean. A shield as shown in the drawing should be placed over the steam coils, both to protect the coils and to increase the

TABLE 1

Capacities of Rectangular Tanks to the Nearest Even Gallon Above 100 Gal. and to the Nearest ¼ Gal. for Smaller Tanks

Width and length (ft.)	Depth in feet ½	1	2	3	4	5
1x1	3¾	7½	15	22½	30	37½
1x2	7½	15	30	45	59¾	74¾
1x3	11¼	22½	45	67¼	89¾	112
1½x1	5½	11¼	22½	33¾	45	56
1½x2	11¼	22½	45	67¼	89¾	112
1½x3	16¾	33¾	67¼	101	135	168
2x2	15	30	59¾	89¾	120	150
2x3	22½	45	89¾	135	180	224
2x4	30	59¾	120	180	239	299
2x5	37½	74¾	150	224	299	374
3x3	33¾	67¼	135	202	269	337
3x4	45	89¾	180	269	359	448
3x5	56	112	224	337	449	560
3x6	67¼	135	269	404	534	673
4x4	59¾	120	239	359	479	598
4x5	74¾	150	300	449	598	748
4x6	89¾	180	359	539	718	898
4x7	105	209	419	628	839	1047
4x10	150	300	598	898	1197	1496
4x15	224	449	898	1346	1795	2244
5x6	112	224	449	673	898	1122
5x10	187	374	748	1122	1496	1870
5x15	281	561	1122	1683	2244	2805
5x20	374	748	1496	2244	2992	3740
7x10	262	524	1047	1571	2094	3118
7x15	393	785	1571	2356	3142	3927
7x20	524	1047	2094	3142	4189	5236

agitation of the boil. About half of the total area of the shield should be pierced.

It is of utmost importance to install a steam coil which is of sufficient capacity to insure violent boiling of the solution in the tank. A simmering or even a fair boil about the steam coils does not bring out the greatest efficiency of tank and cleaning solution. The coil should be made up as a single complete unit and it can be installed in such a way, making use of unions, that it can be easily removed when it becomes necessary to make repairs or thoroughly clean the tank.

Gas-Heated Tanks

Fig. 2 illustrates a tank heated with ring-type gas burners. In general, tank-construction details remain the same as in the steam-heated tank. However, the top edge of the tank should be heavily reinforced with 2-in. angle iron. It is to this member that a galvanized apron may be attached. The function of this apron or shield is to minimize the heat losses by forcing the hot gases against the tank sides. It is necessary to provide at least 6 in. of clearance from the floor to the bottom of the shield and also to provide a row of 2-in. holes along the top of the shield at the back of the tank. An alternate to the row of holes is the installation of a flue which will, through natural draught, carry off waste gases. The shield, made of 22 or 24-gage galvanized iron, should be insulated.

The ring-type gas burners may be obtained through a local gas appliance company. While this type of burner is preferred for some installations, an immersion-type burner may be preferred.

The drawing illustrates other tank features which include an overflow dam made by welding in a length of 1½-in. angle iron to form a trough which is connected by means of a valve and fittings to the sewer. This overflow trough or dam provides a means of removing floating dirt and oils from the solution. If the solution level is brought to that of the top of the overflow dam, all accumulated foreign matter may be skimmed off by means of a short board or metal strip.

Note the drain line of the tank. The bottom fitting in the tank should have threads so that a 2 or 3-in. pipe nipple can be screwed into place extending upward. When it is necessary to empty the tank, 2 or 3 inches of its contents will still remain. This makes it possible to muck out insoluble deposits manually and to keep them from the sewer line which might otherwise clog. After the removal of all solids, the nipple can be unscrewed and the tank flushed out with water before recharging with the cleaning solution.

Steam-Detergent Cleaning

While the tank method of cleaning and rinsing salvage work is probably more widely used than any other, it frequently happens that certain units are both too heavy and too large to handle by this procedure in which event the steam-detergent method may be utilized with remarkable effectiveness. Simple, inexpensive equipment is available today for applying this method, and is already widely used by the railroads, on bus and truck fleets, in shipbuilding and other fields as well as throughout the petroleum industry. Fig. 3 demonstrates its advantages.

The elements of time, results and manpower to handle salvage cleaning are additional and controlling factors that center attention on the importance of selecting the correct degreasing materials to use to prepare work for inspection and reconditioning. Long experience shows that the different constituents and characteristics of oils, grease, gumbo and other deposits found on equipment require specialized materials with emulsifying, saponifying and wetting-out properties to thoroughly remove deposits in the shortest time possible. They must be safe to the metal being degreased and provide a reasonable safety factor for personnel doing the actual work. The point to bear in mind is to do a thorough, complete degreasing job the first time. Often it is discovered, as in the case of valves, bolts, clamps and a wide range of similar parts, that rust deposits have formed underneath the coating of muck, grease or oil. Here again it is essential to use a material that not only removes rust without affecting the sound base metal but one that has a reasonable safety factor from the handling standpoint.

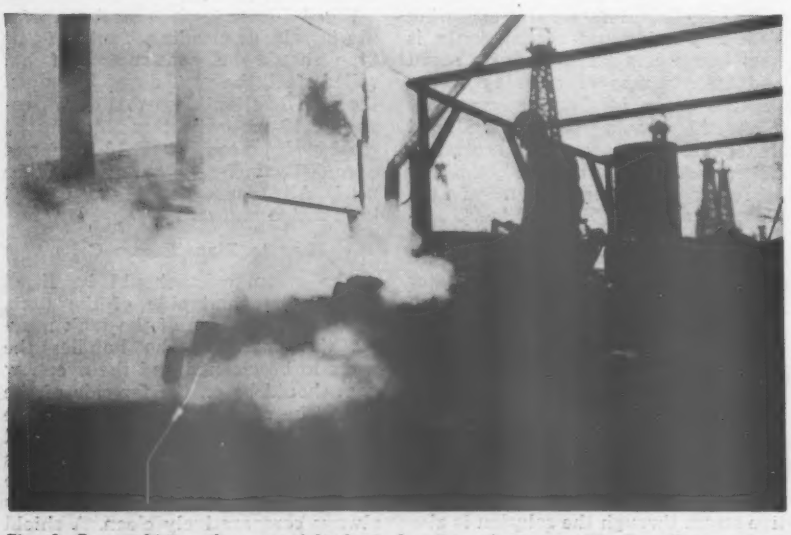

Fig. 3: By combining the powerful physical action of steam with the effective detergent properties of a suitable cleaning material, a steam-detergent cleaning provides fast, easy method for salvage-degreasing of parts too large for tank immersion

Converting the Scrap Into Valuable Replacements

Reconditioning of parts commences at the degreasing tank. See Fig. 4. Stack the valves, fittings, pump parts, flanges, fishing tools, etc., in a sturdy basket, remembering it is good general practice and conducive to best results to clean one type of metal at a time. Lower with chain hoist into a heavy-duty alkaline solution. This solution should possess free-rinsing properties. When used at a concentration of 4 to 8 oz. for each gallon of boiling water, it should effectively remove all muck and grease. After removing parts from solution, they must be rinsed thoroughly.

Rust and scale will now be apparent, should any exist. Removing them requires another immersion, but this time in an inhibited acid "bath." However, if the rust film is not so widespread as to necessitate tank treatment, you can apply this acid solution to area affected with a brush. Wash off and follow with immersion in a weak alkaline solution to neutralize any acid remaining in the pores of the metal. Here, too, be sure to conclude with a rinse.

Inspection Expedited When Parts Are Clean

In many cases, only one of these steps is necessary to make equipment instantly reusable. Subsequent repairs also are expedited when parts are first cleaned thoroughly. In fact, success in building up worn areas through welding, metal spraying or plating is dependent on dirt-free, film-free working surfaces. No time should be wasted between degreasing and following steps in the reconditioning process. Undue delays may

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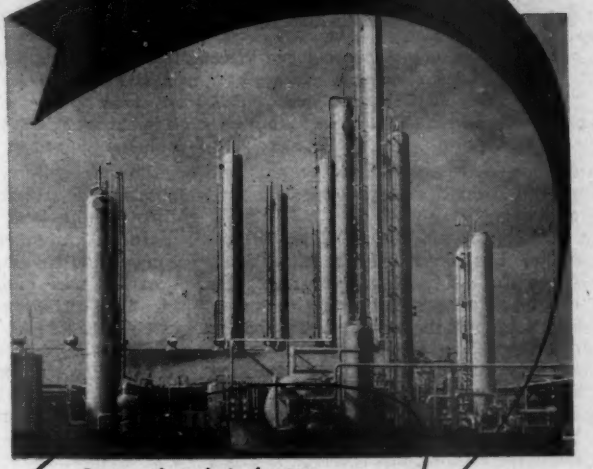

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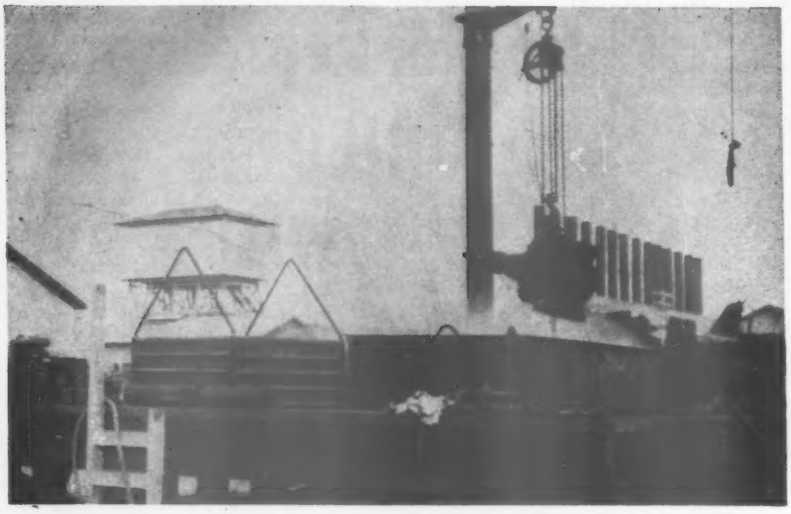


Fig. 4: A simple degreasing and cleaning-tank installation that meets requirements of a pipe-line concern in preparing dismantled equipment for repair and reconditioning. Chain hoist facilitates handling of large parts, while reinforced wire basket seen at left in the foreground provides easy handling of the small parts

enable new rust development and permit foreign matter to be deposited again.

One prominent West Coast oil refinery has developed a remarkably successful salvaging program. By careful selection of cleaning materials and methods they have been able to clean up 25 tons of equipment in extremely dirty, greasy, tarry condition at the low material cost of way under 25 cents per ton. The steel and brass valves, flange-type pipe connections, elbows, and various fittings, small pipe and nipples appeared like new and represented a particularly great saving in replacement costs.

This huge load was cleaned entirely in a small tank containing an alkaline solution with active, emulsifying properties and having good rinsability. Another feature was its exceptionally long life. Negligible upkeep was required considering the volume of work and its constant use during the cleaning period. The initial charge of cleaning material consisted of 51 lb. The upkeep came to 30 lb. This kept the solution concentration at 6 oz. of material for each gallon of water. Parts, valves, etc., were placed in a pipe frame, wire-covered basket, then immersed and boiled for an average of 2 hours. Sixty-two loads averaging 800 lb. were handled during this period.

Another western producer speeds repairing through preliminary cleaning. Oil, dirt, grease and similar deposits are removed from oil-field pumps, engines, and parts by immersion in an alkaline solution. A steel tank of 2,700-gal. capacity, heated by means of a steam coil, is used. An overhead monorail hoist carries the heavier parts. The beginning charge was 6 oz. of cleaning material to each gallon of water. From the time the solution was made up, work went through the tank daily, the parts remaining immersed for 2 to 3 hours. Three months elapsed before any indication was given of a letdown in cleaning efficiency. The addition of one-tenth of the initial charge restored it to full working strength.

Speed and economy of cleaning are directly related. In the salvage department of one refinery, cost reduction was the sole factor weighed. As a consequence only 4 oz. of cleaning material were used with each gallon of water. This necessitated parts to be immersed for 15 hours. All encrusted oil and muck were completely removed and valves, fittings, fishing tools, etc., were left perfectly clean. In another refinery, where time was considered the important factor, the concentration was doubled and the cleaning period slashed to 4 hours. This comparison is a rough one, as condition of each part has a bearing on the time required to clean it. But given two parts of similar condition, the stronger solution will generally shorten the cleaning time.

A Few Tips on Welding, Metal Spraying, Plating, Machining

Renewal of many a worn part is conveniently done by machining off worn section and refinishing the surface. However, if too much metal must be removed the part may be unduly weakened. Then building up the worn section prior to machining is recommended.

For example, the welding method can be used to build up steel valves and pump plugs which have worn down to minimum thickness. Worn pump plungers, pump shafts, motor shafts, etc., can be built up through metal spraying and then machining.

Welding produces a strong, tough and durable buildup. As in any other welding job, the surfaces to be built up must be clean. Any foreign materials remaining prevent proper bonding and tend to hasten failure of the weld. Flux too must be removed from each weld before the adjacent bead is laid.

Success in metal spraying likewise depends on securing a good bond between the base metal and sprayed metal. In this case, in addition to a thoroughly clean working surface, preparation also includes grooving or cutting with a rough thread so the sprayed metal particles will fuse with the base metal. And since even fingerprints on the prepared surface can impair the bond, it is advisable to metallize promptly after the preparation is finished.

Much worn equipment can be built up to original size and shape with electrodeposited metal. One important precaution to observe is to clean the worn area carefully and etch it by an acid treatment before plating.

Antirusting

After items are fully rehabilitated, it is good practice to give them protection against rusting. This is easily done by dipping them into a prepared rust-retarding solution.

Nonmetallic Reclamation

Reclamation of oily, dirty cloths results in substantial savings when effectively handled. Picking up used oil-soaked rags from various sections and storing them in metal cars is a practice of most plants. Oil-soaked rags are a hazard wherever stored. The only absolutely safe way to store them is under water or at least under moist conditions. A small amount of cleaning material added to the water in which they soak materially aids in reclaiming them. Heating them in an oil drum or washing them in a rotary washing machine speeds their return to a clean useful condition.

Equally satisfactory results can be obtained in the washing of oil-filter bags, cotton waste, work clothes and other similar materials. Just a small percentage of cleaning material with oil and grease-dissolving properties added to the water removes grime without laborious effort.

Scarcity of cork has made reclamation of oil-saturated corks an important practice today. An effective method for removing the oil is to immerse the corks for ½ hour in an alkaline solution heated to about 180° F. Use a perforated or wire-mesh container with a cover. This prevents corks from floating on surface yet allows free access of the solution to the corks. Follow this treatment with a cold rinse and a second immersion for 15 minutes in a mild acidic solution, heated to about 140° F.

PROFITS FROM GAS REPRESSURING

SECONDARY-RECOVERY methods for increasing the yield from oil properties are becoming more important each year. Of these various methods, air and gas repressuring is one of the most successful and a number of projects initiated during the past several years have proved the value of this form of secondary recovery. The term "gas repressuring" ordinarily denotes the injection of gas into a formation to obtain a "gas drive." Such projects are usually initiated in oil pools where the liquid saturation of the oil sand has been reduced to a small percentage of its original value.

In this sense gas repressuring differs somewhat from pressure maintenance and pressure restoration, although the primary purpose of all of these forms of gas injection is to obtain the maximum possible amount of oil from the producing formation.

The questions which frequently are asked when a gas-drive project is under consideration are:

1. Is the pool or property suitable for gas repressuring?
2. Aside from the faster recovery will the ultimate yield be greater?
3. What increased profits will be realized from the repressuring?

These questions can be answered only by the exercise of sound engineering judgment and by careful consideration of all cost data. Locations suitable for the application of gas repressuring are limited in number. Before gas repressuring is initiated and large investment costs are incurred, most operators prefer to collect all possible data, which may have a bearing on the project. Unless complete geological and core data are available, one or more wells may be drilled in an effort to determine the amount of oil in the formation. Consideration of core analysis data includes porosity, oil saturation and determination of those zones where porosity or permeability is low.

Additional Oil Recovery

An example of data which are ordinarily used in determining the advisability of gas repressuring is shown in Table 1. On the basis of 35 per cent oil saturation as determined by a test well, the oil content was 525 bbl. per acre-foot. For a 100-ft. producing section, the oil amounted to 52,500 bbl. per acre. Assuming that the ultimate oil recovery could be increased by 5 per cent of this amount, the estimated increase recovery from gas repressuring amounted to 210,000 bbl. of oil for the 80-acre lease. The net value of this increased recovery after deducting royalty, lifting costs, taxes, etc., amounted to $168,000.

Also to be considered from an economic standpoint is the increased rate of production. The recovery of all possible oil in a short-time interval is attractive to all operators since these profits can be invested in other developments.

Cost of Development

The particular development scheme used for gas repressuring may depend upon a number of factors. The program usually embodies a plan for drilling new gas-input wells and may also include the drilling of additional oil wells. The number and spacing of both oil and gas-input wells have an important bearing on the ultimate recovery and rate of production. Close-spacing plans will achieve better control of the gas-drive and consequently will result in higher oil recoveries. On the other hand, wider spacing means lower development costs and the spacing program selected should obtain an economical balance between these two extremes.

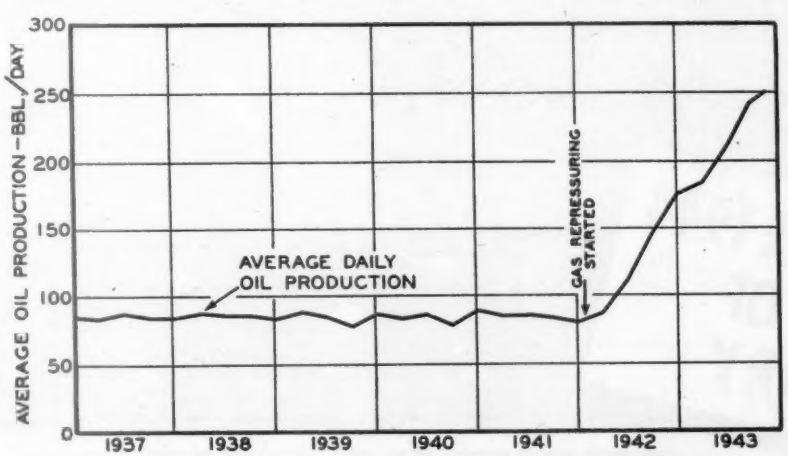
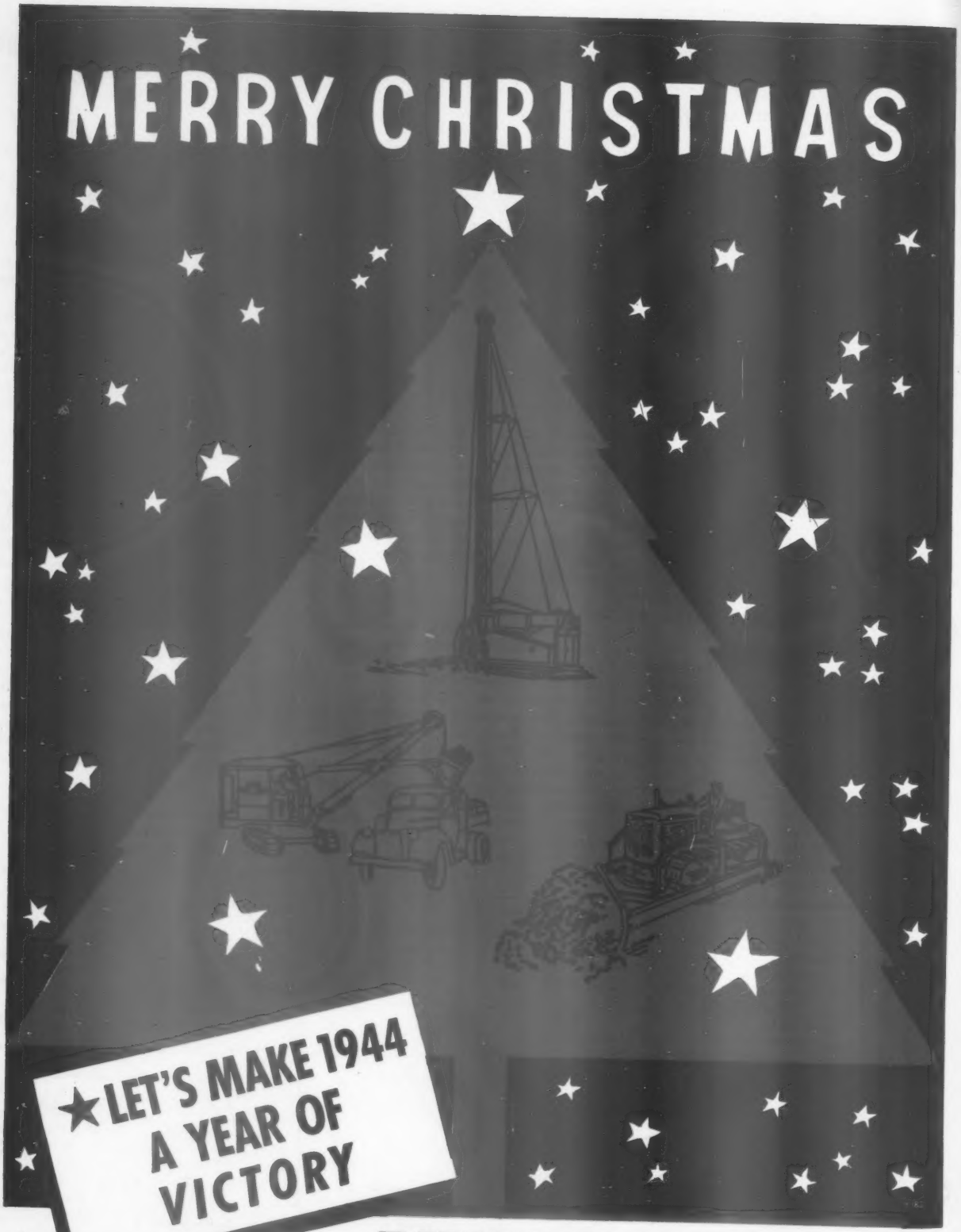


Fig. 1 shows average daily production rate for a lease where gas repressuring was initiated. It will be noted that the daily lease production increased to approximately three times its former value, after the gas drive was started

TABLE 1
Formation Data. Lease "A"

Porosity (bbl. per acre-foot)	1,500
Oil saturation, per cent	35
Oil content (bbl. per acre-foot)	525
Thickness of producing section (ft.)	100
Oil (bbl. per acre)	52,500
Estimated increased recovery by gas repressuring (bbl. per acre)	2,625
Estimated increased recovery for 80 acres (bbl.)	210,000
Net value of increased recovery after deducting royalty, lifting costs, etc. ($0.80 per bbl.)	$168,000
Investment Costs for Gas Repressuring	
Cost of four additional oil wells at $8,000 each	$32,000
Cost of six gas-input wells at $5,000 each	30,000
Plant investment	15,000
Total	$77,000
Profits	
Value of increased recovery	$168,000
Less development cost	77,000
Increased profits	$91,000
Present worth on basis of 10-year lift (5 per cent interest)	$56,500



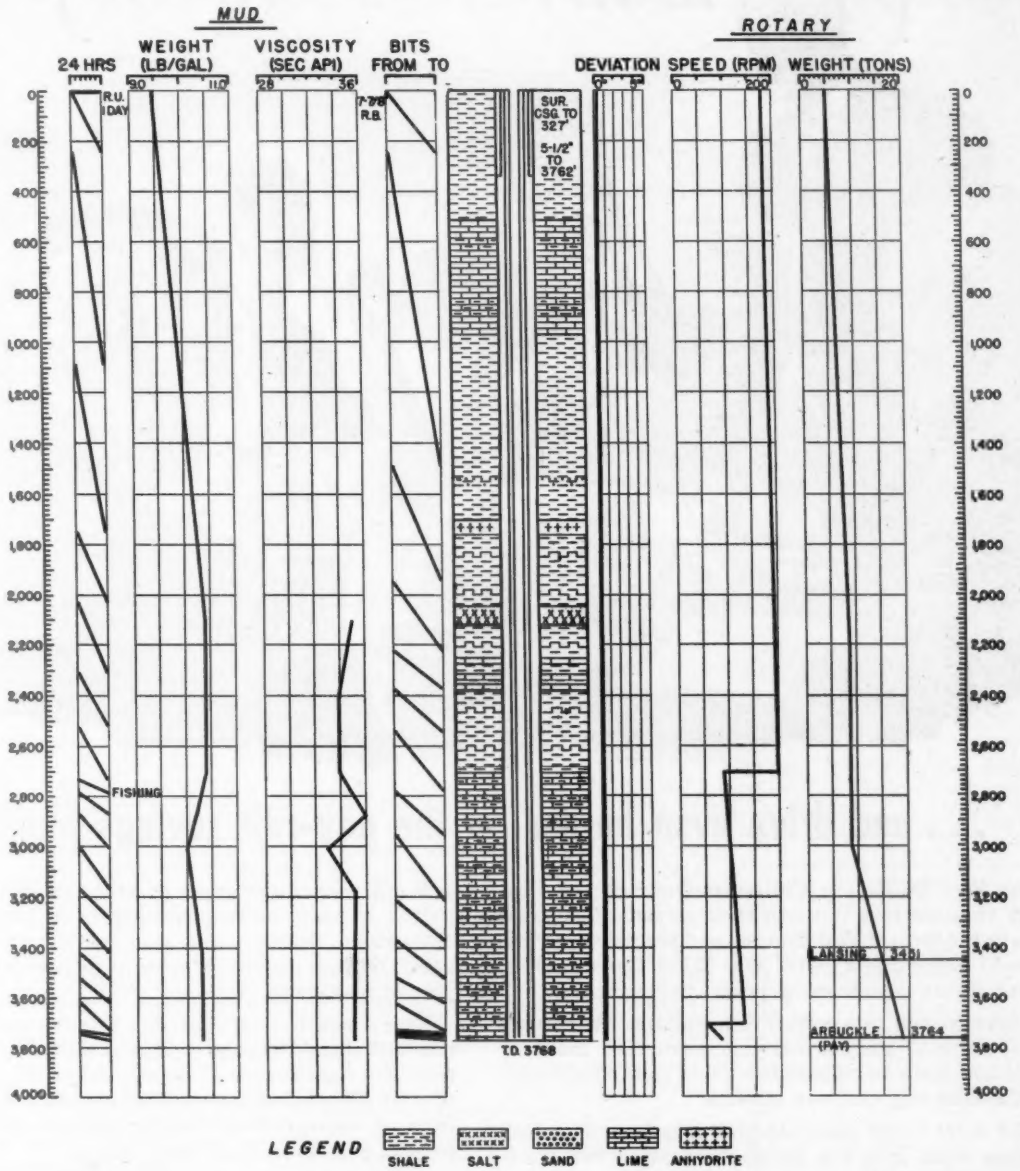
BUCYRUS-ERIE CO.

SOUTH MILWAUKEE, WISCONSIN

Discovery Well, South Morel Pool, Graham County, Kansas

BRIDGEPORT OIL CO., INC., 1-A FESLER
NW NW NW 25-9s-21w

Hollow Drilling Co.
CONTRACTOR



DRILLING DATA

Well elevation, derrick floor	2,244 ft.
Date started rigging up	7- 8-43
Date completed	9-10-43
Date started drilling, rotary	7- 9-43
Date set casing, rotary	8-28-43
Total rotary time	11 days
	Hours
W.O.C.	64
Logging, electric	8
Coring	none
Circulating	8
Drill-stem test	none
Breaking down pipe and running casing	12
Trips	57
Repairs (days)	28
Fishing	102

PRODUCTION TEST

Date—9-10-43.
Pumped—35 bbl. in 2 hours.
Potential—1,904 bbl.
Water—None.
Gravity—26.1.

MUD USED

Type	Amount
Bentonite	45 sacks
Crevis-Seal	3 sacks
Acid used	100 gal.

BITS USED

Type	Number	Size (in.)
Rock bit	17	7⅞

CASING AND TUBING RECORD

Size (in.)	Weight (lb.)	Depth (ft.)	Cement (sacks)
5½	14	3,762	200

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Engineering Fundamentals

No. 117

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

ROTARY DRILLING FLUID FUNCTIONS

EARLY in the use of the rotary system of drilling, water was used as the circulating fluid. It is probable that at that time about the only purpose in using the water circulation was to bring the cuttings from the bottom of the hole to the surface after they were broken up by the bit.

It was not long until the drillers found that water which had clay in it gave better results than pure water. It was noted that the finely divided solid material formed a plaster on the walls which helped to support them and prevent caving, as well as reducing the quantity of water lost from the bore hole to porous formations. It was also noted that the solid suspension in water, due to its greater density, was more effective than pure water in overcoming high pressure gas or water-bearing formations. In addition, it was found that the mud of greater density caused a greater buoyant effect on drill pipe and casing, thus taking more load off of the surface equipment when lowering or hoisting the pipe in the hole.

The thicker (more viscous) character of the clay suspension in water was found to be more effective than water for carrying cuttings from the hole. Similarly, it has been found that the presence of the clay also aids in holding cuttings in suspension and preventing excessive settling of solids to bottom during a shutdown period when circulation is stopped.

In summary, by proper control using modern methods a drilling mud may be made to perform the following functions:

1. Removal of cuttings from the well.

2. Maintenance of sufficient hydrostatic pressure that entry of high-pressure gas or water from drilled formations is prevented.

3. Keeping the bit cool.

4. Holding cuttings in suspension when circulation is temporarily stopped.

5. Aiding, by means of the density and plastering properties of the mud, in the prevention of caving of soft formations.

6. Reduction, by means of proper plastering of walls, of the amount of water lost from the drilling fluid to the formations drilled.

7. Supporting part of the weight of pipe in the hole.

8. Release of cuttings as easily as possible when at the surface.

Conditions have been encountered in certain localities which require very close study and control of drilling mud properties in order to insure proper performance of the mud functions so that wells may be completed with minimum difficulty and expense. For example, in a field of abnormally high pressure at a given depth, the maintenance of a sufficiently high mud density to prevent a blowout, may be a consideration of primary importance. In another field where soft formations show a pronounced tendency to cave, the primary consideration may be to condition the mud to reduce the caving by increasing its density and also its plastering or wall-building property. In some other area, the presence of certain highly permeable zones may make it important to take measures to prevent entry of the mud, often total loss of mud circulation, into such zones.

Due to the greater length of time required for making a trip with the drill pipe in a deep well, it is more important that mud hold the cuttings in suspension. At great depths, too, the weight supported by the hoisting equipment becomes a factor more worthy of notice and an increase in mud density may make an appreciable reduction in the weight that the surface equipment must support.

Table 1 indicates the magnitude of the effect of changes in drilling-mud density on the weight that must be supported by surface equipment as compared to the weight that surface equipment would support if the pipe were freely swinging in air. The column in Table 1 headed W_m/W_a represents the ratio of the weight of pipe suspended in the mud of given density to the weight of the same pipe in air and is based on the assumption that the pipe (as well as the hole in which it is suspended) is full of the given mud.

Example

Problem.—A well is drilling at 11,500 ft. and is using 11,200 ft. of 3½-in. drill pipe weighing 15.16 lb. per ft. (in air) and 13,100 lb. (in air) of drill collar. The density of the mud in the hole is 10.6 lb. per gal.

Calculate:

1. The weight (neglecting friction of pipe against walls of hole) supported by the surface equipment, when bit is just off bottom.

2. Reduction in weight on surface equipment that would result if mud density were increased to 13.5 lb. per gal.

Solution

The total weight of the drill pipe and drill collar in air would be,

$$W_a = 11{,}200 \times 15.16 + 13{,}100 = 169{,}800 + 13{,}100 = 182{,}900 \text{ lb.}$$

1. From Table 1, for 10.6-lb. mud the ratio W_m/W_a is 0.838.

Then the weight of the drill string in 10.6-lb. mud would be:

$$W_m = W_a \times W_m/W_a = 182{,}900 \times 0.838 = 153{,}300 \text{ lb.}$$

2. With 13.5-lb. mud, $W_m/W_a = 0.7935$ (By interpolation from Table 1). Then,

$$W_m = 182{,}900 \times 0.7935 = 145{,}100.$$

Thus, approximately 8,200 lb. of weight is taken off of the surface eequipment by increasing the mud density from 10.6 to 13.5 lb. per gal.

TABLE 1

Mud density per gal	W_m/W_a	Mud density per gal	W_m/W_a
8.4	0.872	13.2	0.798
8.6	0.869	13.4	0.795
8.8	0.866	13.6	0.792
9.0	0.863	13.8	0.789
9.2	0.860	14.0	0.786
9.4	0.856	14.2	0.783
9.6	0.853	14.4	0.780
9.8	0.850	14.6	0.777
10.0	0.847	14.8	0.774
10.2	0.844	15.0	0.771
10.4	0.841	15.2	0.768
10.6	0.838	15.4	0.765
10.8	0.835	15.6	0.762
11.0	0.832	15.8	0.759
11.2	0.829	16.0	0.756
11.4	0.826	16.2	0.753
11.6	0.823	16.4	0.750
11.8	0.820	16.6	0.747
12.0	0.817	16.8	0.744
12.2	0.814	17.0	0.740
12.4	0.811	17.2	0.737
12.6	0.808	17.4	0.734
12.8	0.805	17.6	0.731
13.0	0.801	17.8	0.728
		18.0	0.725

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

QUESTIONS on TECHNOLOGY

by W. L. Nelson

Unauthorized S.A.E. Lube Number Usage

I have been checking on the viscosity indexes of S.A.E. oils and I get all sorts of values. What are the viscosity indexes supposed to be?—A.C.B.

To the knowledge of this department, the Society of Automotive Engineers does not specify viscosity index or the change of viscosity with temperature, in any way. According to the 1943 edition of the S.A.E. Handbook, the S.A.E. Numbers of oils are specified as follows:

	Visc. at zero	Visc. at 130° F.	Visc. at 210° F.
S.A.E. 10w	5,000-10,000	.....	.....
S.A.E. 10	.....	90-120	.....
S.A.E. 20w	10,000-40,000	.....	.....
S.A.E. 20	.....	120-185	.....
S.A.E. 30	.....	185-255	.....
S.A.E. 40	.....	255	80
S.A.E. 50	.....	.....	80-105
S.A.E. 60	.....	.....	105-125
S.A.E. 70	.....	.....	125-150

Nevertheless, S.A.E. numbering systems showing viscosities at three temperatures are frequently encountered and these may underlie the question stated above.

This department has no authority to promote additions to the S.A.E. numbering system but it may be useful to consider additional viscosity information. Thus, if the viscosities at 100° F. and at 210° F. are computed for viscosity values commonly shown in the literature, the values would be somewhat as shown in the following tables. The first table (Table 1) is based on assumed viscosities at 130° F. and at 210° F. as shown in parentheses in the table. Additional viscosities are also shown in parentheses and these were computed by A.S.T.M. method D-341-37T.

Table 2 is similar to Table 1 except that values commonly used at 100° F. and 130° F. were used and the values for 210° F. were computed.

The viscosities shown in these tables are certainly not consistent enough to inspire confidence and hence, it is suggested that all S.A.E. tabulations be abandoned except those shown in the true S.A.E. specifications. If greater confinement of viscosity be desired, the logical move would be to use Viscosity Index limits as an addition to the S.A.E. specifications.

TABLE 1—S.A.E. VISCOSITIES BASED ON VALUES AT 210° F. AND 130° F. COMMONLY FOUND IN THE LITERATURE

	Universal Saybolt Seconds at the following temperatures			
S.A.E. No.	°F.	°F.	°F.	°F.
10w	5,000- 10,000	(150-220)	(90-120)	(44-54)
10	(1,500-100,000)	(135-231)	90-120	(40-50)
20w	10,000- 40,000	(220-390)	(120-185)	(47-67)
20	(1,800-400,000)	(185-500)	120-185	(50-60)
30	.....	(330-670)	185-255	(60-69)
40	.....	(490-700)	255-(293)	(69)-80
50	.....	(500-1,030)	(293-397)	80-105
60	.....	.....	.....	105-125
70	.....	.....	.....	125-150

TABLE 2—S.A.E. VISCOSITIES BASED ON VALUES AT 100° F. AND 130° F. COMMONLY FOUND IN THE LITERATURE

	Universal Saybolt Seconds at the following temperatures			
S.A.E. No.	°F.	°F.	°F.	°F.
10w	5,000- 10,000	(150-220)	(90-120)	(44-54)
10	(1,500-100,000)	(135-231)	90-120	(40-50)
20w	10,000- 40,000	(220-390)	(120-185)	(47-67)
20	(6,000- 10 mill.)	(231-384)	120-185	(39-115)
30	.....	(384-550)	185-255	(47.5-110)
40	.....	(500-652)	255-(300)	(59)-80
50	.....	(652-1,244)	(300-500)	80-105
60	.....	.....	.....	105-125
70	.....	.....	.....	125-150

Lighter Fluids

Would you be kind enough to give us the distillation range of petroleum products used for making cigaret-lighter fluids? Also advise if, in some instances, a kerosene is blended with a highly volatile hydrocarbon for this purpose—A. B. R.

The type of petroleum stock to be used for a lighter fluid should be a straightrun paraffin-base light distillate. Cracked materials or naphthene-base stock would tend to smoke. To get a stable, non-corrosive product the distillate should be acid treated and sweetened.

The Reid vapor pressure could be as high as 9 lb. for cold or winter climates but would need to be limited to 5-7 lb. for warm climates so that excessive vaporization does not occur. The vapor pressure should be an inherent property of the main bulk of the material, not produced by the addition of exceeding volatile materials, such as natural gasoline, or liquefied petroleum gases. Thus, a short-boiling-range material would be most suitable and yet one not entirely deficient in high-boiling material because the high-boiling material will act partly as a sponge or absorption agent for the lighter materal, stabilizing vapor pressure.

The general properties of such a material would be:

	°F.
A.S.T.M.-I.B.P. (max.)	115-145
10 per cent (max.)	140-165
50 per cent (max.)	200-235
90 per cent (max.)	260-300
End point (max.)	320-380
Loss (max.) (per cent)	1
Reid vapor pressure	5-9
A.P.I. gravity	64-70
Doctor test	sweet
Corrosion	negative
Gum (copper dish) max.	2 mg.

This material is generally similar to stove gasoline, stove naphtha or light naphtha (The Oil and Gas Journal, Apr. 25, 1940, p. 189) and to Grades 73, 87, 91 and 100-octane aviation gasolines with respect to boiling range. The low temperature given above (and high vapor pressure) would be for arctic climates (—40° to +35° F.) or for outdoor service (—10° to 50° F.) and the higher temperature limits (and low vapor pressure) would be useful in desert climates or for purely household services.

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REFINING

New Plants Soon to Make More Fuel for Bombers

WHITING, Ind.—Additional units for making 100-octane gasoline are expected to be in operation next month at Standard Oil Co. of Indiana's refinery here. Alkylation, isomerization, and crude and cracked-naphtha fractionating units will employ the newest techniques in turning relatively abundant fractions of petroleum, ordinarily a part of motor gasoline, into more valuable materials needed for aviation gasoline.

Military restrictions prevent announcement of details but a statement issued by company officials says the production will enable the Whiting refinery alone to supply enough 100-octane fuel to carry 1,000 fighting Fortresses on a raid from England to Berlin and return every 6 days. With the addition of another plant which is being built elsewhere Standard of Indiana will produce enough 100-octane gasoline to fuel one such raid every 4 days, and the output of the company and its subsidiaries will soon be enough to fuel one such raid every other day.

The Whiting plants have been under construction for several months, with M. W. Kellogg Co., Foster Wheeler Corp., and Stone & Webster as the principal contractors.

Big Toluene Plant Operated By Standard of California

SAN FRANCISCO, Calif. — Existence in the San Francisco Bay region of a $10,000,000 plant making huge quantities of toluene, was revealed last week by Col. K. B. Harmon, district chief of the San Francisco ordnance district, Army Service Forces. The plant is at the Richmond refinery of Standard Oil Co. of California. In the few months since the plant went into full production, Colonel Harmon said, enough toluene has been produced to make TNT for block busters capable of razing four cities the size of San Francisco.

Designed by Standard engineers and built by the company at its own expense, the plant has been producing toluene under Army contract. It can produce high-octane aviation gasoline as well as toluene. Right now, to meet urgent government demands, plant is turning out aviation fuel. The change-over was accomplished almost overnight. With equal speed it can be converted back to production of toluene.

The plant employs the latest catalytic method of producing toluene from straightrun gasoline, and is the only single installation in the country capable of completing by catalysis the entire process of producing pure toluene.

Standard's new process for making toluene consists of heating the raw material under high pressures to approximately 1,000° F., bringing the vapors in contact with a special catalyst, and then passing the stock through four distillation units to concentrate the toluene content. High-octane gasoline is produced by much the same method.

H. D. Collier, president of Standard of California, said the company has started construction for Defense Plant Corp. of a $13,500,000 plant at Richmond expressly for manufacture of 100-octane aviation gasoline. The other aviation-gasoline plants already in operation by Standard of California represent an investment of almost $14,000,000 by the company, which is making enough aviation gasoline to fuel 700 bombers on a round trip every day between Port Moresby and the Jap base at Rabaul, a flight of 1,040 miles.

No Two 100-Octane Gasoline Plants Alike, Says Ickes

WASHINGTON, D. C.—No two 100-octane gasoline plants in the United States are alike, according to Harold L. Ickes, petroleum administrator. Each of the 20-story giants is of unique construction, strikingly different from any other, because oil is not a simple hydrocarbon. Oil is a complex mixture of hydrocarbons, and the characteristics of different crudes vary widely. Some are classified as asphalt base and some as mixed base. Some crude oils are light and highly fluid. Others are thick and viscous.

The 161 plants now manufacturing 100-octane gasoline or components are not newly built refineries. They are made up of facilities in operation at the time of Pearl Harbor, with additions of special equipment, such as catalytic crackers, alkylation and isomerization units and lead-blending plants. The utilization of existing equipment wrote the specifications for most of the 94 major 100-octane construction projects initiated by the Petroleum Administration for War.

"The magnitude of the rush construction job to speed 100-octane output becomes forcefully apparent when it is realized that each plant is an individual building and engineering achievement," Deputy Petroleum Administrator Ralph K. Davies said. "Each is adapted as to size, operation and special refining processes to the quality of crude available and products to be manufactured. Each added unit must be geared to the old equipment already in operation. No simplification that comes with duplicative construction is possible."

The superfractionation of high-quality base stocks to obtain a larger volume of aviation fuel called for radical changes in the designs for the fractionating tower of a refinery at Baytown, Tex. The extreme humidity of the air on the Gulf Coast requires much higher cooling towers than in East Chicago. The difference in temperature of the cooling water at Wood River, Ill., and Lake Charles, La., was sufficient to necessitate marked changes in the engineering designs of projects in those localities.

National Refining Sells 98 Service Sations to Shell

CLEVELAND, Ohio.—National Refining Co. has sold 98 of its service stations to Shell Oil Co., Inc., of Virginia for a reported consideration of $2,000,000. Control of National Refining was acquired recently by a limited partnership headed by Cyrus P. Eaton, Cleveland financier and industrialist, following which Cooperative Refinery Association bought National's Coffeyville, Kans., refinery, along with 269 producing wells, 768 miles of pipe line, and 104,000 acres of undeveloped land and leases for approximately $4,000,000.

Picket Line Is Withdrawn at Aviation-Gasoline Plant

DUNCAN, Okla.—Work on the government-sponsored aviation-gasoline refinery near here was resumed last week when most of the 1,100 construction men returned to their jobs after a picket line had been withdrawn.

The picket line, established by common laborers, was discontinued when the laborers agreed to end their 6-day walkout over a delay in a wage boost of 15 cents an hour. The increase, giving them an hourly rate of 65 cents, had been approved by the War Labor Board and referred to the Office of Economic Stabilization in Washington.

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to cross the common laborers' picket line, went back on the job as soon as the agreement was reached. The wage dispute involved about 185 common laborers. Their agreement provided they would continue working until their raise was finally approved in Washington.

3,000 Tank Cars Are Freed For West Texas Crude

WASHINGTON, D. C.—The Office of Defense Transportation has assigned about 3,000 tank cars for movement of sulfur crude from the West Texas fields to eastern refineries to supplement the East Coast supply.

Plans call for 39,000 bbl. daily to be moved from Midland, Tex., to the eastern refineries which are equipped to convert the sulfur-bearing crude for commercial use.

British American's New Refinery Now on Stream

Completion and initial operation by the British American Oil Co., Ltd., of its refinery at Clarkson, Ontario, is commemorated by the company in an attractive 32-page booklet in colors, presenting the story of this project, with an account of British American's rise from a modest jobbing concern 37 years ago in Ontario to the modern integrated company which now occupies a place among the world's leading oil enterprises. The booklet is dedicated to Albert LeRoy Ellsworth, founder of the company and chairman of the board, as a "record of his achievement."

The Clarkson refinery, now on stream, was built primarily to produce materials vital to prosecution of the war, but in the postwar period the plant will lend itself, after certain additions and adjustments, to the manufacture of products for general consumption.

A 3½-ft. intake pipe extends ¼ mile out into Lake Ontario, drawing from an unlimited reservoir fresh, clear water which is cold in summer but never reaches freezing temperature in winter. The plant includes cracking units especially designed for manufacture of aviation gasoline; crude-distillation and vacuum equipment for recovery of lubricating-oil stocks, and equipment for solvent refining, dewaxing, and clay-contact filtering in the making of high-grade lubricants.

Abercrombie and Harrison To Increase Size of Plant

WASHINGTON, D. C. — Defense Plant Corp. has authorized an increase in its contract with J. S. Abercrombie Co. and Harrison Oil Co., Houston, Tex., to provide additional facilities at a plant in Brazoria County, Texas, at a cost of approximately $4,000,000, resulting in an over-all commitment of approximately $22,700,000. These two affiliated companies will operate the facilities, title remaining in DPC.

Sketches of Plant Operators

REFINERY management and personnel problems have been subjects of special study by E. E. McPherson, superintendent of Pure Oil Co.'s Heath refinery at Newark, Ohio, since 1930, and his background of experience has equipped him to find the answers.

During his 23 years' service with Pure he has worked as still foreman, Cross still operator and assistant superintendent before assuming his present post, and before that he held jobs with Empire Refineries, Inc., at Gainesville, Tex., and with Standard Oil Co. of Indiana at Sugar Creek, Mo. He was born in Salineville, Ohio, and his boyhood was passed there.

Civic affairs receive much of McPherson's time and energy. He is a director of Newark Chamber of Commerce, chairman of Licking County tax committee, president of Newark Kiwanis Club, member of the Community Chest and Salvation Army boards, and active in church and lodge work. He manages to find time now and then for fishing, hunting and baseball.

With his family, McPherson resides in Granville, where they built a home 2 years ago. And when the time for retirement comes, it's going to be to a beautiful 35-acre wooded spot in the Welsh Hills nearby.

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PIPE LINES

WEP Makes Peak Delivery To East Coast Terminals

War Emergency Pipelines, Inc., made a peak delivery of approximately 310,000 bbl. on December 18, through the 24-in. crude oil line to terminals on the East Coast. This demonstrates that the extension from Norris City, Ill., eastward is operating above its rated capacity. The highest throughput so far for the Longview, Tex.,-Norris City, Ill., section of the line was nearly 328,000 bbl. which was attained in one 24-hour period several weeks ago.

Testing of the WEP 20-in. products line is progressing steadily. Preparations for starting transportation service are being made by accumulating refined products in storage at Beaumont, Tex. It is expected that the first batch to be run will consist of 150,000 bbl. of gasoline which will push out the water now in the line for testing purposes. This batch of gasoline will be followed by heating oil, of which large shipments are anticipated in winter months. A decision is to be reached as to whether water from the line will be dumped at the Ohio River or at Station 21 near Uniontown, Pa.

Stanolind Progresses in Laying of 16-In. Line

More than 50 miles of 16-in. pipe have been laid for the 385-mile line from Slaughter field, Texas, to Drumright, Okla. Most of this pipe has been laid in Oklahoma. Three pumps to be installed at existing Stanolind stations in Texas, at Graford, Bowie and Lakenon, are scheduled to leave shops of pump manufacturers this month and early in January 1944.

Stanolind Gets WPB Permit For Elk Basin-Casper Line

War Production Board has issued a permit to Stanolind Pipe Line Co. for construction of a 240-mile crude-oil line from the Elk Basin field on the Wyoming-Montana boundary to Casper, Wyo. According to current plans the line will consist of 8-in. and 10-in. pipe which will follow a route located so that a section of it will be near Gebo dome, one of the recently discovered fields in Wyoming.

Deliveries of pipe are scheduled to arrive in the second quarter of 1944. Consideration is being given to dividing the laying of the line in such a way that it will be contracted in three sections. Contracts may be let in March or April.

Talco to Displace Trucks by New Line

The 8,000-ft. Travis Peak sand pool of northern Camp County, East Texas, from which oil has been trucked for almost 2 years, is to be given an outlet by the Talco Pipe Line Co. The company is to start construction of a 9-mile 4-in. line from the pool northwest to connect with the company's 6-in. line that delivers oil from Coke Paluxy sand pool of northern Wood County to the company's refinery at Mount Pleasant, Tex. The line also will traverse the new Hope pool of southern Franklin County, Texas.

Ashland and Sohio Complete Outlet for Divide Pool

Ashland Refining Co. and Sohio Pipe Line Co. have completed a system consisting of 2, 3 and 4-in. in Illinois from the Divide pool, 13-1s-3e, to West Coil in 13-1s-4e, where it connects with a line of the Sohio company extending to Coil. Ashland has a 4-in. line that extends from Coil to Johnsonville, Ill.

Gulf Prepares to Loop Texas Lines

Gulf Refining Co., pipe-line division, has applied to War Production Board for approval of steel for 48 miles of 10-in. line to loop various points in its system in the West Texas Permian basin to increase capacity from 60,000 bbl. daily to 76,000 bbl. The 48 miles of looped line would give the company two 10-in. lines from West Texas to Weatherford, Tex. The company proposes to build 17 miles of 8-in. line from Big Sandy in southwestern Upshur County, East Texas, to Longview for delivery of oil to War Emergency Pipelines, Inc.'s 24-in. crude-oil line to the East Coast.

Capacity of Mexican Line to Be Increased

Petroleos Mexicanos is reported to have under consideration the installation of additional pumping equipment on the 150-mile 10-in. crude-oil pipe line from Poza Rica to Mexico City. This line extends from sea level to an elevation of 8,000 ft.

The purpose of the new equipment would be to increase the capacity from 22,000 to 38,000 bbl. per day.

Sunflower to Lay 25 Miles for New Plant

Sunflower Gasoline Co. will lay 25 miles of 3-in. from its gasoline plant in the Salem pool to the location of a casinghead plant to be built in the Johnsonville area of Wayne County, Illinois.

Central Lays Line in Denison Dam Area

Central Pipe Line Co. will take up 2 miles of 2-in. between the Aylesworth pool, Marshall County, Oklahoma, and the nearby townsite. Ten miles of 4-in. will be laid from the pool to Madill, Okla., connecting with a loading rack. This change is being made because the Aylesworth townsite will be under water when the Denison Dam is completed. Central Pipe Line Co. has been shipping to the account of Allied Refining Co., Cleveland, Ohio., for delivery to Atlantic Refining Co., Philadelphia.

Battle Conditions Test Portable Pipe Lines

Portable pipe lines through which it is possible to pump gasoline from tankers in a harbor virtually into the fuel tanks of a plane a thousand miles away have been developed by the Army Corps of Engineers in cooperation with private industry, according to the War Department.

Such pipe lines, which were successful under battle conditions in North Africa, are expected to revolutionize the transport not only of liquid fuels, but also of water to troops fighting in arid regions.

It was pointed out that tank trucks delivering gasoline over the Burma Road burned more than half of their fuel in making the trip, while the gasoline-powered pumping stations on a pipe line require no more than 5 per cent of the fuel to keep up the flow.

Furthermore, camouflage is easy, as the pipe, painted a dull drab, blends with the terrain and is hard to spot from the air. It is said they are even harder to hit, and a 100-lb. bomb must strike within 4 ft. of an aboveground link in order to put it out of operation.

S. S. Smith, manager of products pipe line department, Shell Oil Co., Inc., in a recent article of Mining and Metallurgy said that a plan for a military portable pipe line was accepted by the Chinese Defense Supplies Corp. after the situation was studied in 1941. An application was made for the required steel under Lend-Lease and much of the pipe had been accumulated when the U. S. Army made a quick decision to use it for foreign American military operations. Consequently the 1,000 miles of pipe ordered for China was diverted to North Africa instead because in the interim the Burma Road was lost.

Cities Service Gas Line More Than Half Completed

More than 135 miles have been laid in the construction of the 250-mile 26-in. natural-gas line of Cities Service Transportation & Chemical Co. from the Hugoton field to Blackwell, Okla., which has been entirely contracted by Bechtel-Dempsey-Price. One gang has been shut down near Hooker, Okla., for the past week because of deep snow in the Panhandle; the other two gangs have continued at the usual rate.

BUCKEYE MODEL 11 for Speed and Economy on gathering, product and natural gas lines. Digs trench 11½" to 22" wide — up to 5' deep.

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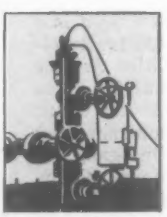
Widely used and field approved, this scientific compound acts with remarkable efficiency and complete safety. May be used full strength or dispersed in water. Easy to use and easy to get—always available at your supply store.

FOR PUMPING WELLS Parid P-51, full strength or dispersed in water, may be poured into the tubing between polish rod and tubing walls, by raising the stuffing box —without shutting down the well.



FOR FLOWING WELLS the fluid level is dropped by shutting in the well; connecting a pressure lubricator with the tubing and introducing Parid P-51 solvent into the tubing under pressure.

FOR FLOW LINES clear lines of oil and lubricate Parid P-51 into Lead line at well head. Then blow the solvent along the lines with gas from the casing. After two hours or more, flush with oil.

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Natural Gas

Gas From West Cement Is Asked to Relieve Shortage

OKLAHOMA CITY, Okla.—Prompted by a request from Cities Service Gas Co. for permission to run more gas from the West Cement pool, in Caddo County, in order to relieve a shortage, Oklahoma Corporation Commission has called a bearing on gas allocation from that area, to be held here December 29.

Cities Service reported that last week's cold wave caused the company to withdraw about 120,000,000 cu. ft. of gas from storage and to cut off about 250,000,000 cu. ft. from industrial consumers so that homes might be provided with gas for heating and cooking.

Kansas City Gas Consumers To Share in Profits Refund

KANSAS CITY, Mo.—Cities Service gas-distributing companies in Kansas, Missouri, Okahoma, and Nebraska plan to pass along to consumers any refunds resulting from a recent Federal Power Commission order, "in excess of a reasonable return on the fair value" of the distributing company property.

Hope Plans Extension of Its Facilities in West Virginia

WASHINGTON, D. C. — Federal Power Commission has received applications from Hope Natural Gas Co. for permission to construct and operate additional natural-gas facilities in West Virginia. Hope recently made with Tennessee Gas & Transmission Co. a gas purchase contract which provides that Tennessee shall deliver into the applicant's transmission system at its Cornwell compressor station, in Kanawha County, 75,000,000 cu. ft. of gas per day. The contract further provides that applicant may purchase 25,000,000 cu. ft. of additional gas. Gas will be received, the application says, at 475 lb. pressure and discharged into Hope's existing system at approximately 1,500 lb. pressure.

Hope desires to build a 1,000 hp. compressor, two high-stage gas compressors and appurtenant equipment at the Cornwell station at an estimated cost of $162,631, in order to receive this additional gas at the southern end of the company's system at the pressure specified and discharge it generally in a northward direction to its wartime and regular markets at much higher pressures than at present, and properly to handle the present field gas now being pumped at Cornwell through existing transmission main-line facilities.

SEC Grants Lone Star Gas Extension of 6 Months

PHILADELPHIA, Pa. — Lone Star Gas Corp. and its successor, Lone Star Gas Co., have received from Securities and Exchange Commission an extension of 6 months in which to comply with an order issued October 22, 1942, requiring the companies to dispose of certain Texas properties.

The extension is designed to enable Lone Star Gas to divest itself of Galveston and El Paso properties and businesses of Texas Cities Gas Co. Council Bluffs (Iowa) Gas Co. and Northern Natural Gas Co. have already been disposed of.

Carbon-Black Sales Expand With Rising Rubber Output

Rising production of synthetic rubber is accompanied by a noticeable expansion in sales of carbon black, one of its major constituents. Sales of carbon black have been running ahead of production since last June, a reversal of the situation which had developed earlier as a result of curtailment of manufacture of rubber goods.

Carbon black stocks probably attained their peak of around 257,000,000 lb. last May, the highest since 1932, and since then they have been declining.

By the end of last September, stocks had fallen to about 245,000,000 lb. September shipments were about double those in September 1942, and about 20 per cent higher than in August 1943. Production of all kinds of black has been fairly constant in recent months, but appreciably higher than a year ago.

Natural Gasoline

Phillips Begins Construction Of Natural-Gasoline Plant

BARTLESVILLE, Okla. — Phillips Petroleum Co. has begun construction of a natural-gasoline plant in the Seminole field, Gaines County, Texas, 4 miles northwest of the town of Seminole. The plant, providing the first and only market for natural gas in that area, has been designed by the company's engineers and will be built by Phillips as a private project.

At peak construction about 300 workmen will be employed. In operation, the plant will require a minimum of 15 employes.

Natural-Gasoline Production In October Sets Record

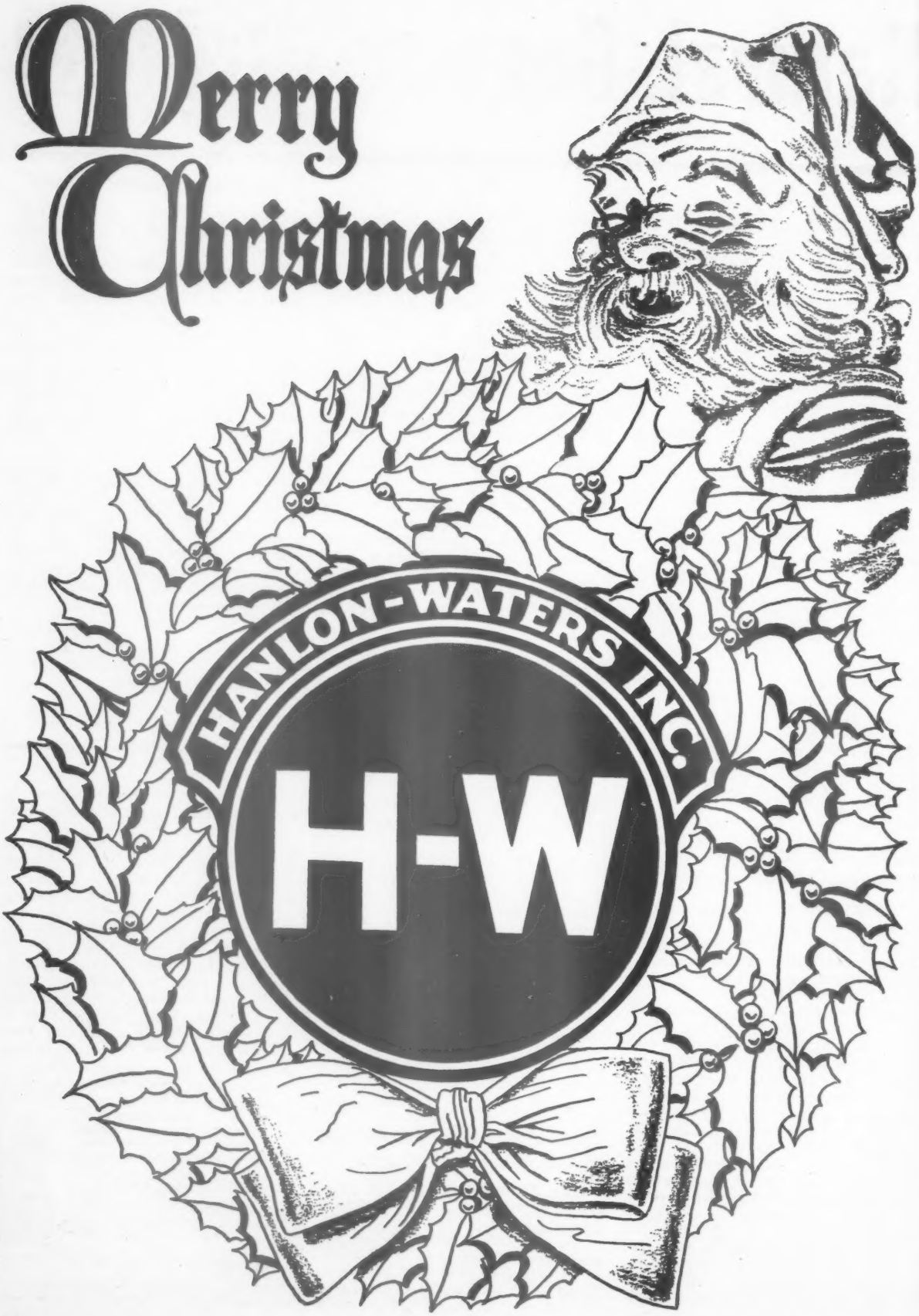
WASHINGTON, D. C.—All previous records in output of natural gasoline and allied products were broken in October, when the daily average production, according to U. S. Bureau of Mines, was 10,614,000 gal., compared with 10,503,000 gal. in September. The principal increases were in the Panhandle, Illinois, Oklahoma and Appalachian districts.

Total stocks at plants, terminals, and refineries dropped to 187,530,000 gal. from the 198,366,000 gal. reported for September 30, 1943, and 227,808,000 gal. on October 31, 1942. The most important change in production for October 1943, was the greater output of liquefied petroleum gases at natural-gasoline plants. The demand for these products at refineries was below that for September, but for fuel uses it increased materially. Isobutane production at natural-gasoline plants rose to 16,338,000 gal. in October compared with yield of 15,120,000 gal. in September.

PRODUCTION
(Thousands of gallons)

	Oct.	Sept.
Natural gasoline	180,432	176,190
Cycle products	60,396	59,136
Liquefied petroleum gases:		
Isobutane*	16,338	15,120
Other L.P.G.*	71,862	64,638
Liquefied refinery gas	11,004	13,944
Benzol	8,400	8,400
Total production	348,432	337,428

*At natural-gasoline and cycle plants.


Merry Christmas
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H-W

Exploration and Drilling

Week's Highlights

A WARTIME-INSPIRED anomaly exists this year in exploratory and development drilling. The customary letdown in activity starting generally in October and carrying well through the start of another year is absent in most areas where weather conditions permit continuous operation. Exceptions to the year's trend, of course, prevail in the Rocky Mountains, the Appalachian area and to a lesser extent in Michigan, Illinois and Indiana.

There has been a slight decline in geophysical exploration caused by shortages of essential equipment and by turnover of manpower. There are more than 350 crews in operation. The breakdown as to types of geophysical activity is approximately as follows: Seismic, 240 crews; gravity meter, 63; magnetometer, 6; core drill, 40; torsional balance, 1.

Suppliers are having difficulty in obtaining deliveries on their orders placed with manufacturers for geophysical equipment. This situation, the Petroleum Administration for War disclosed last week at the monthly meeting of the Petroleum Industry War Council, has been taken up with the various divisions of the War Production Board with a view to expediting deliveries. Shortages have been particularly acute in some types of electronic tubes used in seismic work. Manufacturers who had discontinued production of these essential accuterments to seismic exploration have been approached with proposals that the items be rescheduled in the WPB program.

Part of the optimism surrounding exploratory work in the Rocky Mountains was offset this week by failure of two wildcat operations in the Denver basin. Preparations to start two additional tests in the general vicinity, however, indicates that operating companies have not lost faith in the productive possibilities of this geological feature which covers the northeast quarter of Colorado and extends into western Nebraska and southeastern Wyoming. Showings of commercial proportions have been found in the Muddy sand and in the Lakota.

The recovery from September's slump in exploratory drilling was maintained through November and indications are that December will extend the trend through the complete final quarter. Wildcat completions increased 6 per cent in November over the October rate, although the greater activity was reflected chiefly in an increase of dry holes. The increase was concentrated largely in Texas where approximately 100 wildcat wells were finalled. Completions in Texas included eight oil discoveries, five fewer than registered in October when a total of 88 wildcats were finished. Montana's accelerated pace of discoveries was maintained with two new fields resulting from completion of eight exploratory wells.

WEST TEXAS: A 2-mile north extension for the Wasson field, Yoakum County, is indicated and a deep pay zone in northeast Howard County attracts attention (p. 84). New Clear Fork pool in Pecos County promised by showing 5 miles northeast of Apco-Warner field.

CANADA: Dominion Oils, drilling in the Taber field of southern Alberta, has completed a 500-bbl. well, the largest producer yet drilled in that province outside the Turner Valley field (p. 83).

GULF COAST: The Stowell field in Jefferson County was extended into Chambers County by a dual completion which produced approximately 750 bbl. daily (p. 81).

COMPLETIONS IN ALL FIELDS . . .

(Week ended December 18, 1943)

	Oil	Gas	Dry	Total	Footage	Total Comp. to date 1943	1942
N. Y., Penna., W. Va.	47	23	3	73	145,503	3,342	3,337
Ohio	3	12	10	25	61,064	917	1,090
Indiana	7	1	3	11	19,589	216	323
Kentucky	5	2	1	8	16,866	466	191
Illinois	30	0	22	52	131,253	1,744	1,775
Michigan	6	0	7	13	31,980	613	653
Kansas	22	0	21	43	152,134	1,842	1,482
Nebraska	0	0	1	1	4,070	28	34
Missouri-Iowa	0	0	0	0	0	18	13
Oklahoma	15	3	8	26	83,387	1,161	1,145
Texas:							
North Central Texas	15	0	16	31	70,766	1,448	999
West Texas	11	0	5	16	63,948	900	1,248
Texas Panhandle	2	0	0	2	6,050	178	323
Eastern Texas	3	2	7	12	62,192	308	385
Texas Gulf Coast	6	2	2	10	73,553	460	659
Southwest Texas	11	5	6	22	102,897	914	984
Total Texas	48	9	36	93	379,406	4,208	4,598
North Louisiana	7	3	4	14	39,525	332	466
Louisiana Gulf Coast	5	0	1	6	42,856	349	431
Total Louisiana	12	3	5	20	82,381	681	897
Arkansas	5	0	6	11	48,727	269	174
Mississippi and Southeast	1	0	4	5	22,859	104	64
Montana	2	0	1	3	7,007	229	197
Wyoming	4	0	1	5	30,395	132	108
Colorado, Utah	1	0	1	2	10,414	30	24
New Mexico	7	0	4	11	33,290	237	232
California	32	1	4	37	105,367	1,346	785
Total United States	247	54	138	439	1,365,692	17,383	17,120
Total previous week	246	50	161	457			
Week ending Dec. 19, 1942	194	37	97	328			

ILLINOIS

Three Pools Extended and New Pays Discovered

CENTRALIA, Ill. — Thirty new oil wells with initial production of 2,573 bbl. per day, an average of 86 bbl. per well, were completed during the week, together with 22 dry holes, a total of 52 completions. The largest new well was credited with 292 bbl. initial output, and only four wells produced more than 200 bbl. initially.

A commercial showing of oil from Aux Vases sand in a northeastern outpost of the North Markham City pool was recorded in Central Pipe Line Co.'s 1 J. T. Henry, C NE SE 13-2s-4e, in northeastern Jefferson County. The well started to flow 45 minutes after a drill-stem test began. The pay is at 2,938-45 ft. This pool had produced solely from McCloskey limestone.

A south extension to the East Albion pool was in sight as Burr Lambert and Guy L. Parris 1 S. Cowling, SW NW NE 29-25-14w, Edwards County, found saturation in Cypress sand at 2,815-21 ft. A 1-hour drill-stem test developed 1,850 ft. of oil and 50 ft. of oil-cut mud.

E. A. Obering and Highland Oil Co. 1 Baker Pence Community, SE SE SE 9-4n-6w, in Madison County, was reported to have flowed 100 bbl. in 24 hours from Devonian lime at 1,695-97 ft. total depth 1,698 ft. The well extended the Marine pool and was said to be the best well in the pool to date.

Forty-four new operations were reported during the week. Of these 10 were wildcats, some of which were in remote counties, including Herndon Drilling Co. 1 R. Proctor, NE NE SE 36-36n-8e, Kendall County; Dale Hopkins 1 E. Aleshire, NW NW NE 18-4n-5w, of fourth p.m.; Hancock County; Hamberg & Miller 1 Taylor, SE NE NE 30-1n-1w of fourth p.m., Schuyler County. New wildcats "closer in" were Noah's 1 E. West, C S½ SE NW 28-2s-10e, Edwards County; Bennett Bros. 1 L. Hinze, NW NW SW 12-2s-14w, Wabash County; Halbert & Leach 1 Leach & Gilson, C SW NE 14-4s-6e, Hamilton County; Heath, Allison et al 1 Harrell, SE NE SW 33-6s-8e, White County; L. L. Waggoner 1 Green, NE NE NW 28-5n-4e, Fayette County; H. Hubbard 1 Schriefer, NW NW NW 3-1s-3w, Washington County, and Cooperative Oil Co. 1 fee, 398 ft. from south and 839 ft. from west lines SE SE 7-11n-11e, Cumberland County.

ILLINOIS WILDCAT COMPLETIONS

Clinton County: Jack Darnell 1 Thien, NW NW SW 19-1n-3w, dry at 968 ft. Cypress sand at 929 ft.

Crawford County: Ohio Oil 17 M. Burner, NE cor. SW SW 5-7n-12w, old well deepened from 1,110 ft., dry at 1,586 ft., Benoist sand 1,454 ft., Renault 1,480 ft., Aux Vases 1,512 ft., Rosiclare 1,537 ft., Fredonia 1,546 ft., no McClosky lime.

Cumberland County: K. W. Kilpatrick 1 E. Morris, NE SE NE 27-11n-7e, dry at 2,175 ft., Tar Springs 1,672 ft., Cypress 1,884 ft., Benoist 2,012 ft., Aux Vases 2,068 ft., Fredonia 2,120 ft.

Edwards County: Patti Humphreys 1 Crackel-Franklin, C S½ SW NW 33-2s-10e, dry at 3,329 ft. Base of Pennsylvanian 2,150 ft., Cypress 2,975 ft., Benoist 3,080 ft., Aux Vases 3,212 ft., McClosky 3,310 ft.

Franklin County: J. W. Murchison 1 Franklin Co. Coal, NE SW SE 11-5s-2e, McClosky lime top 2,942 ft., T.D. 2,942 ft., P.B. to 2,874 ft., pumped 8 bbl. of oil per day.

Hamilton County: Alexandria Fruit Co. 1 Wright, C W½ NE SW 34-5s-5e, dry at 3,491 ft. Kinkaid 2,148 ft., Cypress 2,935 ft., Benoist 3,132 ft., Aux Vases 3,229 ft., St. Louis 3,484 ft.

E. B. Gill Drilling Co. 1 Oliver-Sneed, SE NW SW 14-4s-7e, dry at 3,466 ft., McClosky lime at 3,443-48 ft. and 3,454-62 ft.

Jefferson County: E. A. Obering 1 McClintock, SW NE NW 24-2s-2e, dry at 2,884 ft. Menard 1,970 ft., Cypress 2,438 ft., Aux Vases 2,668 ft., McClosky 2,810-29 ft. and 2,846-82 ft.

Jasper County: G. H. Shrock et al 1 Jansen, C N½ NE SW 29-8n-8e, dry at 2,808 ft., Glen Dean 2,311 ft., Cypress 2,480 ft., Aux Vases 2,700 ft. McClosky 2,784-98 ft.

Lawrence County: George & Wrather 1 Ebbett, NE SE NW 26-4n-12w, dry at 2,012 ft. Glen Dean 1,479 ft., Cypress 1,663 ft., Benoist 1,783 ft., Aux Vases 1,868 ft., McClosky 1,918-45 ft.

Randolph County: Southwest Illinois Coal 1 Cleland, NE SE NW 25-5s-5w, dry at 2,566 ft. Menard 608 ft., Cypress 1,025 ft., Benoist 1,112 ft., Ste. Genevieve 1,255 ft., St. Louis 1,385 ft., Chattanooga 2,456 ft., Devonian 2,466 ft.

Sangamon County: C. H. Davis 1 Taft, N½ SE NE 15-5n-3w, dry at 1,850 ft., Paint Creek 695 ft., Ste. Genevieve 810 ft., St. Louis 850 ft., Keokuk 1,355 ft., Kinderhook 1,600 ft., Silurian 1,787 ft.

Union County: Nation Oil Co. 1 Gray, SE NW SE 2-11s-1e, dry at 1,949 ft.

White County: Jarvis Bros. & Marcell 1 Tallman, NW NE NE 26-3s-10e, dry at 3,166 ft. Upper Kinkaid 2,020 ft., Cypress 2,846 ft., Benoist 3,022 ft., Aux Vases 3,124 ft., Ste. Genevieve 3,148 ft.

DAILY AVERAGE PRODUCTION FOR WEEK

	Dec. 18 crude oil	Distillate, allied products	Dec. PAW quota all oils	Dec. 11 crude oil
Arkansas	78,200	4,800	81,700	79,860
California	797,400	47,500	855,500	780,300
Colorado	7,600	.....	7,000	7,120
Eastern fields	72,965	8,900	85,900	70,150
Illinois	225,350	12,700	227,700	221,850
Indiana	14,220	.....	14,400	12,775
Kansas	271,800	6,100	291,100	273,500
Kentucky	26,480	3,000	28,500	23,960
Louisiana	354,050	22,000	375,700	354,120
North Louisiana	78,550	.....	.....	78,620
Louisiana Gulf	275,500	.....	.....	275,500
Michigan	53,100	100	57,100	52,900
Mississippi	47,600	.....	48,000	47,220
Montana	20,850	300	23,800	23,265
Nebraska	1,700	.....	1,500	1,700
New Mexico	112,900	6,000	116,600	112,550
Oklahoma	325,800	28,000	358,000	325,150
Texas	1,894,825	126,000	2,018,000	1,882,900
East Texas	364,400	.....	.....	364,300
West Texas	354,350	.....	.....	354,400
North Central Texas	143,400	.....	.....	143,400
East Central Texas	126,900	.....	.....	115,100
Texas Panhandle	94,450	.....	.....	94,400
Texas Gulf Coast	711,625	.....	.....	711,600
Southwest Texas	99,700	.....	.....	99,700
Wyoming	96,450	3,700	103,700	102,550
Total United States	4,401,290	269,100	4,694,200	4,371,870

Total production January 1-December 18, 1943 ..... 1,445,526,305 bbl.
Same period last year ..... 1,368,832,175 bbl.

APPALACHIAN FIELDS

Fayette County Test May Go to Newburg

PITTSBURGH, Pa. — In southwest Pennsylvania one of the gas wells on Chestnut Ridge in Fayette County, is being deepened below the Oriskany and may be carried to the Newburg. In Washington County, there was a fair gas well. In West Virginia, except for a test in Ravenswood district, Jackson County, results were poor and routine.

Southwest Pennsylvania

On Chestnut Ridge in South Union Township, Fayette County, New Penn Development Co., W. E. Snee et al are deepening 1 Heyn at 7,655 ft. It is now gaging about 180,000 cu. ft. of gas mostly from a horizon in the top of the Silurian. If nothing intervenes deepening will be carried to the Newburg which is expected at 8,100 to 8,200 ft.

West Virginia

On the Blackwater anticline, Dry Fork district, Tucker County, Ohio Oil Co. has a fishing job at the deep test on the Kaemmerling tract with tools lost at 7,979 ft.

Ravenswood District. — Columbian Carbon Co. 725 T. B. Murray, 2,363,000 cu. ft gas. Corniferous lime 4,733 ft., Oriskany 4,845 ft., gas 4,850-70 ft.; shot 4,845-85 ft., T.D. 4,885 ft.

Season's Greetings

Our greeting is hearty because it is hopeful—more so than it was a year ago.

And that it can be a hearty greeting and a hopeful one, we feel is due in large measure to the gigantic efforts of the Petroleum Industry to win a war that again people may be Merry on Christmas Day.

FRED E. COOPER • • • ALLIS-CHALMERS

MONTHLY WILDCAT COMPLETION RECORD, SEPTEMBER-NOVEMBER, 1943

	Oil			Distillate			Gas			Dry			Total		
	Sept.	Oct.	Nov.	Sept.	Oct.	Nov.	Sept.	Oct.	Nov.	Sept.	Oct.	Nov.	Sept.	Oct.	Nov.
Ohio	1	0	0	0	0	0	1	1	2	4	12	5	6	13	7
Indiana	0	1	1	0	0	0	0	0	0	2	1	3	2	2	4
Kentucky	4	1	1	0	0	0	0	0	0	5	11	3	9	12	4
Illinois	10	11	10	0	0	0	0	1	0	20	25	27	30	37	37
Michigan	0	1	1	0	0	0	1	0	1	21	24	25	22	25	27
Kansas	3	1	4	0	0	0	0	0	0	37	25	39	40	27	43
Nebraska-Missouri-Iowa	0	0	0	0	0	0	0	0	0	5	6	0	5	6	0
Oklahoma	3	3	3	0	1	0	0	3	0	22	19	20	26	25	23
Texas:															
North Central	3	6	4	0	0	0	0	0	0	29	26	30	32	32	34
West	2	1	4	0	0	0	0	0	0	5	6	7	7	7	11
Panhandle	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
East	0	1	0	0	0	1	0	1	0	7	6	5	7	8	6
Gulf Coast	0	2	0	1	0	0	0	0	0	5	15	28	6	17	28
Southwest	1	3	0	1	0	0	2	1	0	27	20	18	31	24	18
Total	6	13	8	2	0	1	2	2	0	73	73	89	83	88	98
Louisiana:															
North	0	1	1	0	0	0	0	0	1	3	5	6	3	6	8
Gulf Coast	1	0	2	2	1	1	0	0	0	2	2	3	5	3	6
Total	1	1	3	2	1	1	0	0	1	5	7	9	8	9	14
Arkansas	0	0	0	0	0	0	0	0	0	5	4	5	4	4	5
Mississippi	0	2	1	0	0	0	0	0	0	5	9	12	5	11	13
Montana	0	2	2	0	0	0	0	1	3	6	5	3	6	8	8
Wyoming	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0
Colorado, Utah	0	0	0	0	0	0	0	0	0	0	2	2	0	2	2
New Mexico	3	0	1	0	0	0	0	0	0	1	2	3	4	2	4
California	2	1	1	0	0	0	2	1	0	14	12	13	18	14	14
Total	33	37	36	5	1	2	6	10	7	225	238	258	269	286	303

TOTAL wildcat completions in November increased 17 over the previous month, the difference being accounted for mostly by dry holes while the number of oil completions remained about the same. The number of exploratory wells drilled, after hitting a high of 365 in August, then dropping to 269 in September, has since shown a steady increase.

This upward trend through the last quarter of the year is an indication of the stepped-up exploration programs of nearly all companies. In previous years, operations took a steep dip in October and continued at a low level until spring. This was a natural drop, due to cold weather and year-end slackening of work. The ratio of oil wells found is nearly 12 per cent, approximately constant.

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N. CENTRAL TEXAS

Hildreth Pool Gains Two Good Producers

WICHITA FALLS, Tex.—The Hildreth pool of Montague County, rapidly becoming one of the best fields in the district, gained two good wells on the east and southeast edges.

Continental Oil Co. 1 Middleton-Gadberry Unit, Section 53, E.T.R.R. Survey, on the east side, was completed flowing 348.16 bbl. in 6 hours for a daily potential rating of 1,392 bbl. The test is producing from Bend conglomerate, through casing perforations from 6,098 ft. to 6,138 ft., total depth 6,400 ft. On the southeast side of the field, O. C. Whitaker 1 H. C. Gadberry, NW NW SE Section 56, J. A. Staley Survey, flowed 186 bbl. in 3 hours to rate a daily potential of 1,488 bbl. at total depth of 6,224 ft. North of St. Jo, Continental Oil 1 Spencer, E. Green Survey, opened a new sand producing area when it was finaled for a pumping potential of 73 bbl. per day from sand pay at 2,774-78 ft., plugged back from total depth of 4,342 ft. and shot with 10 qt. of nitro. Failure for the northwest flank of the Mueller pool appeared likely when Continental 1 Miertschin, W. A. White Survey, total depth 7,462 ft., acidized with 4,000 gal. through perforations at 6,010-20 ft., and swabbed out the oil load and 160 bbl. salt water.

NORTH CENTRAL TEXAS WILDCAT COMPLETIONS

Archer County: White & Duncan 1 L. Kinder 55, 2,300 ft. from N, 300 ft. from E, Sec. 55, Blk. 5, Clark & Plumb subd., 3½ mi. NE Archer City, dry, T.D. 1,275 ft.

Denton County: Sohio Prod. 1 Ed Sanders, 660 ft. from N and E, A. C. Warren Sur., 6 mi. SE Pilot Point, Ellenburger 2,505 ft., dry, T.D. 2,675 ft.

Montague County: Continental Oil J. G. Spencer, 330 ft. from S and W 285.3-ac. lease, E. Green Sur., north of St. Jo., I.P. 73 bbl. pump, perf. 10 shots 2,774-78 ft., Strawn sand, P.B. to 2,773 ft. from T.D. 4,342 ft. Discovery.

Mid-Continent Pet. M. D. Freeman, 467 ft. from S, 660 ft. from W Blk. 20, John H. Belcher subd., S.S.O. 4,689-93 ft., Caddo 5,364 ft., S.O. 5,398 to 5,402 ft., Simpson 5,621 ft., S.O. 5,621-23 ft., 5,639-42 ft., Ellenburger 5,855 ft., dry at T.D. 5,893 ft.

Wilbarger County: The Texas Co. 1 Emma L. Main, 765 ft. from NE and SE, Sec. 16, Blk. 8, H.&T.C. Ry. Sur., 14 mi. SW of Vernon, I.P. 400 bbl., 38 gravity, perf. 69 shots 2,786 to 2,803 ft., acid 1,000 gal., P.B. to 2,850 ft. from T.D. 4,725 ft. Discovery.

Young County: Morgan & Turner 1 W. E. Edwards, 600 ft. from N, 200 ft. from E, Sec. 1481, T.E.&L. Sur., dry, T.D. 930 ft.

WEST CENTRAL TEXAS WILDCAT COMPLETIONS

Brown County: F. D. Feldman 1 G. T. Butler, 1,389 ft. from N, 1,540 ft. from W, 110-ac. lease, Blks. 1 and 2, John McGloin Sur., dry, T.D. 1,430 ft.

Callahan County: J. J. Calloway 1 Naomi and Fred Heyser, 150 ft. from N and E, SW¼ William Scurlock Sur., dry, T.D. 762 ft.

Stephens County: Woodley Pet. 2 F. Thorpe et al, 1,870 ft. from E, 330 ft. from S, Sec. 453, S.P. Ry. Sur., elev. 1,449 ft., dry, T. D. 4,280 ft.

LOUISIANA GULF

White Lake Wildcat Nearing Test Stage

NEW ORLEANS, La. — Union Oil Co. of California is preparing to test the 1-A State-White Lake, Lease 540, wildcat in T-14s-2w, northwestern part of White Lake in Vermilion Parish, having found sands indicative of production. Total depth of the hole is 12,000 ft. with 5½-in. casing set to 10,768 ft. The company's 8-A Vermilion Parish School Board, Section 16-15s-1e, at East White Lake field, was drilling below 9,500 ft.

Calcasieu Parish. — Gulf Refining Co. completed its first producer at Vinton last week and rig is being moved to location for a second test on the same lease. The producer is the 1 Vinton Petroleum Co., SE¼ NW¼ 34-10s-12w, which flowed 213 bbl. per day on 5/32-in. choke. Production was from 180 perforations at 5,350-80 ft., total depth 5,850 ft.

Republic's Christmas wish to you is for the early return of the brave men and women of our armed forces, in full Victory, to the pursuits of Peace, in the true Freedom that they are now so nobly defending » » »

REPUBLIC NATIONAL BANK
OF DALLAS

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BAROID PRODUCTS . . . BAROID and COLOX, AQUAGEL, FIBROTEX, BAROCO, STABILITE, AQUAGEL-CEMENT,

St. Martin Parish.—Amerada Petroleum Corp.'s discovery well in the Arnaudville area in northern St. Martin Parish, 44-7s-5e, flowed 65 bbl. per day through 5/32-in. choke on final test from perforations at 10,349-378 ft. The oil is 42.2 gravity. Tubing pressure was around 3,700 lb. Total depth is 10,700 ft.

Cameron Parish.—Pure Oil Co. 1 State-Snake Lake, Lease 549, 25-13s-3w, extreme east end of the parish, on the Snake Lake prospect, is attracting attention as operators continue attempts to prevent a blowout. Total depth of the hole is 11,301 ft. where it is showing considerable pressure. A string of 7-in. casing had been set to 10,165 ft.

TEXAS GULF COAST

Dual Completion Extends Chambers County Pool

HOUSTON, Tex.—Completion of a major extension at the Stowell field, which also opens production in Chambers County for this field, was the highlight of Texas Upper Gulf Coast district last week. The new producer is Gulf Oil Corp. 1 Horace Williams, Lot 85, Koch Subdivision, F. Valmore Survey, about 4,500 ft. northwest of former production on the Jefferson County side of the Stowell field. The well, drilled to 7,841 ft., was a dual completion. "A" sand was topped at 7,640 ft., and made potential of 349.30 bbl. a day, with a trace of water; and "B" sand topped at 7,590 ft. flowed 305.85 bbl. a day through ¼-in. choke.

Chambers County.—Crosby Drilling Co. et al found the 8,100-ft. discovery pay in the 1 Mary Etta Mayes, about a mile southwest of the discovery producer at Jackson Pasture, favorable for production and set 5½-in. casing to 8,125 ft. Total depth of the test is 8,434 ft. The 1 Jackson, discovery producer in this field, was completed several months ago as a gas condensate well in perforations at 8,102-08 ft. Since completion of the discovery well, the operators have drilled a dry hole to the east. Plug has been drilled in the Mayes and perforations are being made for testing.

Liberty County.—An old gas well in the Cleveland field of Liberty County has turned into an oil producer and was recompleted. It is Gulf Oil Corp. 8 Kirby Lumber Co. et al "C," in John Pleasant Survey. This well was completed in February 1935 and was shut in until May 1943 because of lack of market. On November 9, 1943, it started showing black oil and flowed 204 bbl. a day through ¼-in. choke in sand topped at 5,722 ft. Gravity was 41.4.

TEXAS UPPER GULF COAST WILDCAT COMPLETIONS

Brazoria County: Glenn H. McCarthy 1-A W. B. Munson, 5½ mi. SE of West Columbia, 1½ mi. SE of Munson at Bailey's Prairie, dry at 11,700 ft. in the sidetracked hole.

Jefferson County: Glen H. McCarthy 1 Texas Public Service Co., in William McFarland League, 6¾ mi. SE of Nome, dry at 9,520 ft.

SOUTHWEST TEXAS

Potential Tests to Get Under Way at Discoveries

CORPUS CHRISTI, Tex.—Although completion gages have not yet been run, several Southwest Texas discovery wells are in the process of testing and several others are preparing to test.

Magnolia Petroleum Co. 1 Ingram, 1¼ miles southwest of Burnell in Bee County, is retesting at 6,802-06 ft. after making a squeeze job due to high gas-oil ratio on first test, when it showed 16 bbl. of 39.5-gravity oil in 13 hours. Perforations for the second test were made slightly lower in the sand at 6,795-6,830 ft. First test in perforations at 6,820 ft. had recovered salt water.

Fred W. Shield 1 Etta Terrell, discovery 4 miles southeast of Fannin, in Goliad County, near the Victoria County line, was flowing 4 to 5 bbl. an hour through ⅛-in. choke from perforations at 4,650-65 ft.; no water, gravity 23.9. This oil production is from the basal Frio.

Arkansas Fuel Oil Co. 1 E. Lyons has definitely opened a new field 2½ miles south of Runge in Karnes County, flowing 120 bbl. of oil per day through ¾-in. choke, by heads, the oil being 49 gravity with no water. This flow is from perforations at 6,595 to 6,610 ft. in the Reklaw zone and potential is expected soon.

LOWER GULF COAST WILDCAT COMPLETIONS

Cameron County: Great Lakes Carbon Corp. 1 Yturria Ld. & Lv. Corp., 5 mi. SW of Point Isabel, dry at 6,007 ft.

Karnes County: Adams O. & G. Co. 1 Clara Hunt et al, about 2 mi. SE of the Hondo Creek field, dry at 8,507 ft. in Wilcox.

Victoria County: Rowan & Hope 1 Joseph Bucher, 3 mi. N of Salem, dry at 4,505 ft.

SOUTH TEXAS WILDCAT COMPLETIONS

Duval County: J. W. Gorman 1 fee, 1 mi. SE of Seven Sisters field, 8 mi. NE of Freer, dry at 3,193 ft.

Pan American Prodn. Co. 1-B Elizabeth Parr, discovery well in Thomas Lockhart area, G.H.&H. Sur. 115, A-257, 6½ mi. NW of Sandiego, 2 mi. E of Bridwell field, completed 11-26-43, flowed 78 bbl. a day, ⅜-in. choke, T.P. 30 lb., C.P. 500 lb., gravity 43, no water, flowing from perforations, 54/4,671-80 ft. Total depth 4,727 ft., 5½-in. set at 4,725 ft., Pettus oil sand 4,672-79 ft.

McMullen County: Edwin M. Jones 102 Harry Ezzell, Agt., W½ NW¼ Sec. 10, Ezzell Ranch subd., 3 mi. S of Callihan in Patrick Fadden Sur., A-4, discovery gas well, pay sand 1,222-32 ft., T.D. 1,800 ft., 8,000,000 cu. ft. gas day, open flow.

Starr County: W. L. Goldston 2 D. L. Garza, new pay gas discovery in Ross field, Sh. 44, J. S. de la Garza Porc. 88, elev. 424 ft., pay sand 2,775 ft., T.D. 2,875 ft., flowing estimated 8,000,000 cu. ft. gas day.

Webb County: Dulup Oil Co. 1 J. G. Garcia, 1¼ mi. N of Dulup field, 2½ mi. SW of McLean field, dry at 1,942 ft.

SOUTH CENTRAL TEXAS WILDCAT COMPLETION

Travis County: J. E. Schultz 1 George Hibbs 337.53-ac. tr. in Amos Alexander Sur., dry 1,275 ft.

EASTERN TEXAS

Extension Indicated for Chapel Hill District

DALLAS, Tex.—Phillips Petroleum Co. 1 Mayfield Co., H. C. Cook Survey, 2 miles southeast of nearest production in the Chapel Hill field of Smith County, was showing for a well in the Rodessa section of the Glen Rose after perforating casing with 36 shots from 7,708-22 ft. The test is bottomed at 8,600 ft., and found no production in either the Pettit or Travis Peak zones, and was plugged back to its present depth. The nearest producer is Sinclair Prairie 1 Alexander, H. K. Carson Survey, which is producing from Pettit through formations 8,407-40 ft., and was a light well. The Rodessa wells in the field are principally gas and distillate producers.

Van Zandt County.—Delta Drilling Co. 1 Gibson-Echols unit, Walker Survey, had progressed to 8,185 ft. in shale, with top of massive anhydrite called at 7,910 to 8,080 ft.

Wood County.—The Alba structure, which has had numerous tests to the Woodbine and Paluxy, is now being tested with a 9,000-ft. well at Plains Producing Co. 1 Cox, just south of the town of Alba, which was drilling below 8,794 ft in sandy shale. Shell Oil Co., Inc. 1 Whatley, southeast flank of Manziel pool, was drilling below 8,715 ft.

EAST TEXAS WILDCAT COMPLETIONS

Henderson County: L. O. McMillan 1 H. C. Gross, 330 ft. from N, 1,300 ft. from E, 91-ac. tract, R. P. Pate Sur., dry, T.D. 4,931 ft.

Wood County: Danciger Oil & Ref. 1 J. O. Sparks, 330 ft. from NE C 40-ac. unit, 198-ac. tract, Elijah Allen Sur., 3 mi. SE Winnsboro, Georgetown 5,478 ft., Paluxy 6,730 ft., dry, T.D. 6,943 ft.

Bell County: W. F. Collins 2 Nelson & Cross, 750 ft. from NE, 375 ft. from NW, 200 ft. SW from 1-A, elev. 599 ft., dry, T.D. 505 ft.

R. B. Roberts 1 Ed Huess, 660 ft. from NW and SW, 171-ac. tract, Jack Shackelford Sur., elev. 971 ft., dry, T.D. 916 ft.

Wood County: Goldston & Collins 1 J. W. Riley, 467 ft. from N and E Blk. 22, M. J. Nunez Sur., elev. 459 ft., Pecan Gap 2,722 ft., Austin 4,122 to 4,402 ft., Woodbine 4,891 ft., Georgetown 5,742 ft., Fort Worth 6,397 ft., dry, T.D. 6,505 ft.

CALIFORNIA

North Inglewood Area Opened to Exploration

LOS ANGELES, Calif.—The Culver City council voted last week to permit drilling of oil wells within the corporate limits of the city so that Hogan Petroleum Co. will be able to proceed with development work on property owned by Mrs. Marie Machado. Action of the council reflects completion a few weeks ago of a 4,000-bbl. flowing well by Federal Oil Co. at the northern tip of Inglewood field which extends over into Culver City.

Considerable leasing has taken place in the Salton Sea area in Imperial County, California, and there is a possibility 2 wildcats will be started in the near future. No deep wells have been drilled in the area and the only production to date has been carbon dioxide gas near Niland. Pliocene and Miocene formations are present which with proper structural conditions justify exploratory work.

Field reports indicate that Richfield Oil Corp. may have a gas well in the making near Chico in Butte County, although the test has not yet been completed. If a successful completion is recorded it will open up a new field. On a brief formation test, Richfield 1 Chico, 17-21n-1e, made promising showings, but the tests were not entirely satisfactory. This wildcat is bottomed in basement material at 7,005 ft. but the gas pay zone is higher up in the hole.

Los Nietos Oil Co. is making production test at 1 Scott, 5-32s-13w, in the Arroyo Grande district of San Luis Obispo County. This wildcat which showed oil will open a new oil field if it develops commercial production. There was some question as to the shutoff on the 7-in. pipe which was cemented at 3,095 ft.

With the exception of Ventura Avenue, one of the best fields in the state, the Cat Canyon and Santa Maria Valley fields of Santa Barbara County are outstanding in the coastal district. PAW hopes to stimulate additional drilling in the Cat Canyon field where the Los Flores zone of Miocene age is yielding exceptionally large wells, and is considering issuance of authority for operators to develop the Santa Maria Valley field on the basis of 1 well to 10 acres.

There is a very distinct shortage of pumping equipment in California currently and there is not much hope of securing relief within 90 days. Casing likewise is not too abundant with the result that some companies have been obliged to purchase salvage pipe from San Joaquin fields. Production is being lost by the inability of some operators to put wells on the beam upon completion.

Colusa district, Colusa County: General Petroleum 1 Capital, 15-k5n-1w, flowed 4,560,000 cu. ft. gas,, no oil, 25/64-in. bean, pressures 500/435 lb., T.D. 3,460 ft., P.B. 3,000 ft. Discovery well in new commercial gas field.

Loma Grande district, Monterey County: Loma Grande Oil Co. 1 Corey, 23-24n-10w, dry in gray sand, T.D. 4,320 ft.

Pomona district, Los Angeles County: Macmillan Petroleum Corp. 1 Walnut Creek, 22-1s-9w, dry in basement rock, T.D. 2,210 ft., basalt 1,677 ft.

Puente district, Los Angeles County: Melvin Hansen 1 Puente, 24-2s-10w, dry, T.D. 3,225 ft. in Miocene, oil and gas showings reported at 2,815 ft.

MICHIGAN

Muskegon Well Draws Attention of Operators

SAGINAW, Mich.—Michigan oil men are awaiting confirmation of reports concerning the "rediscovery" of oil in Muskegon County. Muskegon Oil Corp., which opened the Muskegon field 16 years ago, has brought in a new producer north of the city of Muskegon and near the Lake Michigan shore. No details were revealed but Hugh D. Crider, geologist for the corporation, who picked the site for the original discovery well and the present wildcat declared that while the new well "probably will not exceed the first well's 300 bbl. a day, it is of high structure, indicating the possibility of a new field."

In seven other Michigan counties last week operators continued unsuccessful in their search for new crude sources as seven dry holes classed as wildcats were completed. Results were better in proven fields as six new producers with total initial potential of better than 2,800 bbl. a day were completed. Most of this was from two good wells in Newaygo County's Goodwell field and from another in the Fork field of Mecosta County.

MICHIGAN WILDCAT COMPLETIONS

Allegan County, Otsego Township: Oil Producers, Inc., 1 Jones, NE SW NE 14-1n-12w, dry in Traverse lime, T.D. 1,535 ft.

Clare County, Surrey Township: Union Drilling & Producing Co. 1 Hull-McDermott, C S½ SW SW 6-17n-5w, dry, T.D. 1,760 ft.

Isabella County, Coe Township: W. H. Clock 1 R. Clark, SW SW NW 3-13n-3w, dry in Monroe, T.D. 3,715 ft.

Lake County, Cherry Valley Township: Oil Producers, Inc., 1 Katherine S. Rice, C N½ NW NW 25-18n-12w, dry in Monroe, T.D. 3,555 ft.

Lapeer County, Rich Township: Ohio Oil Co. 1 Alvin Harrington, C N½ SW SE 22-10n-10e, dry in Monroe, T.D. 2,724 ft., P.B. to 2,410 ft. in Dundee.

Mecosta County, Chippewa Township: Gordon Oil Co. 1 Jacob E. Detwiler, C E½ NW SW 13-16n-8w, dry in Dundee, T.D. 3,890 ft.

Van Buren County, Columbia Township: S. L. McCall 1 Nelson, SE SE NW 29-1s-15w, dry, T.D. 1,150 ft.

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ROCKY MOUNTAIN

Two Julesburg Basin Tests Are Disappointing

DENVER, Colo. — Two wildcats in the Julesburg (Denver) basin area, northeastern Colorado and southeastern Wyoming, approximately 140 miles from each other, were reported disappointments.

General Petroleum Corp 78-31-G, SW SE SE 31-17n-68w, Laramie County, Wyoming, on the northwest rim of the basin, is reported drilling within a few feet of the granite at 7,422 ft. with nothing showing below the Lakota, after testing the Tensleep lime, the equivalent of the productive Minnelusa section at Lance Creek. This was the discovery well in the Lakota in 1942, which gave promise of opening an important pool. It came in making 580 bbl. initial, but subsequently turned to water. Two other wells were drilled, one of which was abandoned, and the other is making only 15 bbl. a day from the Muddy.

The other failure in the basin was the Mutual Oil Co. 1 Fletcher, in the Wray district, Yuma County, Colorado, which was dry at 3,608 ft. after testing the Dakota series.

These failures are offset by two important wildcats in the same general region which are getting under way. One of these will be drilled by the Keyes Drilling Co. for R. A. Martinson, and others, including Frontier Refining Co., in the Kit Carson area in Cheyenne County at 1 J. W. Ruff, C SW NE 24-13s-49w. The location is a mile south of a well drilled in 1938 by Gulf Oil Corp., and 2 miles south of a test drilled last year by Torrey and associates. The interest in this structure is based primarily on oil shows encountered in the Gulf well.

The other wildcat, which is ready to spud, is Ohio Oil Co. 1 Nordloh, C SE SE 20-5n-63w, southeast of Greeley, in Weld County, Colorado.

COLORADO WILDCAT COMPLETION

Yuma County, Wray: Mutual Oil Co. 1 Fletcher, SE SE SE 27-1s-46w, dry, T.D. 3,608 ft.; tested Dakota series; top of Muddy sand 3,290 ft.

Sinclair-Wyoming Oil Co. 31-E Wertz, which had the top of the Tensleep at 6,643 ft., and was dry at 6,774 ft., defines the limits of the Wertz field on the southwest flank. It was a west offset to 24-A Wertz which was completed 2 years ago for 480 bbl. initial in the Tensleep.

Bell sand and Madison lime, which were looked upon as potential reserves when Lance Creek developed big production in the Leo (Tensleep) horizons several years ago have been ruled out as a result of a deep test on top of the structure in Ohio Oil Co. 8 Converse Sheep, which found the Bell at 5,482 ft., and the Madison at 5,633 ft. nonproductive.

WYOMING WILDCAT COMPLETIONS

Hot Springs County, Gebo: Continental 1 Gebo Unit, SW SW SE 23-44n-95w, T.D. 5,309 ft. Oil with water in Tensleep, 5,057 ft.; P.B. 4,900 ft.; completed in Embar, top at 4,739 ft., for 90 bbl. an hour from upper 107 ft. of section after acid, 1,500 gal., and 22 bbl. per hour natural from lower section of 33 ft. of saturated sand without acidizing. Elevation 4,734 ft.

Niobrara County, Lance Creek: Ohio Oil 8 Converse Sheep, NW SE SW 32-36n-65w, T.D. 5,692 ft., P.B. 5,420 ft., completed in fourth Leo sand for 40 bbl. per day, 90 per cent water, top fourth Leo 5,352 ft., Bell sand 5,482 ft., Madison 5,633 ft. Elevation 4,376 ft.

MONTANA WILDCAT COMPLETION

Teton County, Pendroy: Jarvis & Marcelle 1 Wallenstein, C NE NW 18-27n-5w, dry, T.D. 2,952 ft., top of Madison 2,615 ft., S.O. with sulfur water.

CANADIAN FIELDS

Taber Field Producer Swabs 500 Bbl. Daily

CHATHAM, Ont. — In the Taber field, southern Alberta, Dominion Oils Taber-Province 17-18B, LSD 16, 18-9-16w4, finished at 3,178 ft., on a 22-hour test swabbed 457 bbl. Pro-

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duction comes from 37 ft. of saturated Taber sand from 3,141-78 ft. The fluid level during swabbing held around 1,820 to 2,000 ft. Crude is 21 gravity, slightly higher than in Taber-Province 1 discovery well immediately south, which started at 350-bbl. initial production, settling to around 170 bbl. A new test has been spotted immediately north of 17-18B. The new well, largest Alberta producer yet drilled outside Turner Valley is being put on the pump.

Pincher Creek.—In the Alberta foothills, just north of the Montana boundary, Arrow-Marjon Co. 1, LSD 10, 12-6-2w5, drilled by Petroleum Corp. of Canada Exploration, Ltd., has spudded. The area has had three previous tests.

Alliance 1 encountered Fernie shale at 5,670 ft. and faulted back to Benton at 6,030 ft. Anglo-Canadian 1 Castle River got the Blairmore at 4,720 ft. and penetrated a fault at 6,060 ft. Weymarn 2, on the west flank of the Mill Creek anticline, encountered the Kootenay at 1,920 ft., faulting back to the Blairmore at 2,580 ft. and Belly River at 3,820 ft. where considerable oil was brought to the surface with the circulating fluid. Drilling was continued for the Madison limestone without testing the oil showing. The well penetrated a fault at 5,690 ft. and discontinued drilling in the Benton at 6,420 ft. Considerable 42-gravity crude has since been bailed. This is believed to have its occurrence in a thrust fault plane and to have migrated northeastward from a deeper source beneath the entire Mill Creek anticline. The crude source is thought to be the Madison or older limestones.

PERMIAN BASIN

Deeper Pay Indicated in Northeast Howard Pool

MIDLAND, Tex.—The Vincent pool of northeast Howard County, which created a spirited leasing and drilling play last May when it opened a deeper pay than productive in the Iatan-East Howard and Westbrook pools, nearest fields, again is attracting attention. W. S. Guthrie and Cosden Petroleum Co. 2 Pauline Allen, NW SE Section 57, Block 20, Lavaca Navigation Co. Survey, northwest offset to the discovery, had a show of oil at 5,460 ft., and drilled soft lime with shale streaks to 5,481 ft., and oil rose 1,800 ft. in the hole. The oil tested 31.6 gravity. The discovery well had pay in Clear Fork lime from 4,040-96 ft., but this zone was barren in the new prospect.

Yoakum County.—A 2-mile north extension for Wasson pool was indicated at Woodley Petroleum Co. 1 Mittie Farmer, SW SW Section 635, Block D, J. H. Gibson Survey, which was drilling ahead at 5,302 ft. with 130 ft. of free oil in the hole. Nearest wells on the north edge of Wasson pool had only 50 ft. of pay, topped at about 5,200 ft.

Pecos County.—A new pool from the Clear Fork lime was indicated at Humble Oil & Refining Co. 1 O. L. Barnes, S¼ S¼ Section 120, Block 10, H.&G.N. Railway Survey, 5 miles east by north of the Apco-Warner pool, and 4 miles east by north of Anderson-Prichard Oil Co. and Magnolia Petroleum Co. 1 Powell-State, which opened production from lower Permian lime at 3,539-57 ft. The new prospect cored from 3,340-50 ft., recovering saturation from 3,340-46 ft., and operators prepared to take drill-stem test.

Winkler County.—Stanolind Oil & Gas Co. and Shell Oil Co., Inc. 2 W. D. Blue, ½ mile south of the Wheeler pool Ellenburger discovery, recovered a 12-ft. bleeding core of dolomite, lime and chert from 7,805-21 ft., and the top 5 ft. of the next core from 7,821-39 ft. was of the same formation, also bleeding, believed to be lower Wichita of the Permian.

Kimble County.—Renfro 1 Murr, Section 7, Block 4, G. Murr Survey, Ellenburger test, reported a show of oil in Bend lime, Pennsylvanian, from 2,350-68 ft., but was drilling ahead.

Crockett County.—A big flowing well for the northeast side of the Noelke pool was in process of completion. Brown, Hancock and Hines 2 T. Wade, Section 27, Martha Wilton Survey, was flowing at the rate of 100 bbl. per hour from sand pay at 1,267-72 ft.

WEST TEXAS WILDCAT COMPLETIONS

Andrews County: Humble Oil & Ref. 1 Crews & Mast, SW SE Sec. 8, Blk. A-34, Public School Land, elev. 3,212 ft., anhydrite 1,775 ft., Yates 2,830 ft., show gas 2,970 ft., San Andres 4,623 ft., dry, T.D. 10,596 ft.

Crockett County: Moore Bros. 1-32 J. M. Shannon, O.W.D.D., 660 ft. from S, 1,980 ft. from W, Sec. 32, Blk. 1, G.C.&S.F. Ry. Sur., elev. 2,514 ft., O.T.D. 1,892 ft., dry.

Lubbock County: J. R. Sharp 1 Mary C. Brown, SW NW Sec. 113, Blk. C, B.S.&F. Sur., dry, T.D. 5,000 ft.

Runnels County: L. E. Hults 1 C. C. Grey, 990 ft. from N, 330 ft. from W, subd. 42, E.T.R.R. Sur., S.O. 2,827 ft., Adams Branch lime 3,300 ft., O.T.D. 2,415 ft., T.D. 3,860 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M.—DeKalb Agricultural Association 1 J. P. White, Chaves County wildcat, 35-10s-28e, is preparing to perforate pipe above retainer set at 3,780 ft., and test. The wildcat was drilled to 7,515 ft.

Lea County.—South of Maljamar pool, Northern Ordnance 1 Iverson is nearing the expected pay in drilling below 4,112 ft. The H. B. Taubman wildcat in 18-17s-34e, west of Vacuum pool, was drilling below 4,775

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and

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ft. in black shale, already below the pay found in Repollo Oil Co. 1-197 State, SE SE SE 6-17s-34e, 1¼ miles north, which is the nearest producer. Neville G. Penrose 1 State, 11-15s-35e, northwest of Lovington, recovered 2,700 ft. salt water on drill-stem test 5,500 to 5,545 ft., and was shut down for orders. It is possible that the test will be carried to 11,000 ft. if sufficient support can be obtained.

SOUTHEAST NEW MEXICO WILDCAT COMPLETIONS

Lea County: T. F. Morrow 1 State, NW NW 22-12s,-35e, 5 mi. W by N of Tatum, elev. 4,071 ft., anhydrite 2,110 ft., salt 2,220 ft., Yates 2,900 ft., lime 4,308 ft., dry, T.D. 5,225 ft.

B. H. Nolen 1 Alston, SW SW Sec. 17-13s-35e, elev. 4,099 ft., anhydrite 2,044 ft., salt 2,175 ft., white lime 4,300 ft., dry T.D. 5,127 ft.

PANHANDLE

AMARILLO, Tex. — Stanolind Oil & Gas Co. 1 Troy Broome, Section 46, Block 20, H.&G.N. Survey, Donley County, was planning a drill-stem test after core from 6,125-40 ft., returned only 3 ft. of chalky cherty shale and lime. Stanolind 1 W. H. Groom, Labor 36, League 320, State Capitol Lands, Oldham County, was drilling below 5,566 ft. at last report.

KANSAS

Western Kansas Wildcat Has Oil in Cherokee Sand

ATLANTIC Refining Co. has prospects of a small pumper southeast of the Nunn pool in Finney County. The 1 Gobelman, SE NW NW 35-21-34w, perforated and acidized in the Misener sand topped at 4,640 ft. and swabbed 1 bbl. of oil an hour. A second acid treatment increased the oil to 3 bbl. an hour. It was then plugged back to the Cherokee sand at 4,608 ft., where perforations and acid at 4,612-41 ft. put 1,000 ft. of oil in the hole in 1 hour. On last report operators were cleaning out to put it on the pump. Atlantic staked location for a second test, to the north, at the 1 Davies, SW NW 26-21-34w.

KANSAS WILDCAT COMPLETIONS

Cowley County: Aladdin Pet. 1 Rowe, SE SE NE 6-34-6e, dry, T. D. 2,927 ft.

Dickinson County: Wolf Creek & Crosbie 1 Brenizer, NW NE SW 35-12-2e, dry, T. D. 3,112 ft., Viola 2,889 ft., Arbuckle 3,082 ft.

Graham County: Cities Service 1 Dodson, NW SW 28-9-21w, dry, T. D. 4,024 ft.

Leavenworth County: Chas. Miller 1-A Stillings, SE SE 1-10-21e, dry, T. D. 1,345 ft.

Huisman et al 1 Bachelor, SE SE SE 27-10-21e, dry, T. D. 1,230 ft.

IND., OHIO, KY.

Posey County Has Large Well in Tar Springs Sand

EVANSVILLE, Ind.—An unusually good well for the present-day Indiana fields is Bennett Bos. 1 J. W. Spencer, NE SE SW 32-6s-14w, Posey County, which pumped and flowed 512 bbl. in 24 hours from Tar Springs sand at 2,142-49 ft., total depth. The well which is located about 5 miles west of Mount Vernon, is 2 miles from nearest production. It was not yet a completion. Another wildcat of interest was Sells Petroleum, Mohawk Oil Co. and Central Pipe Line Co. 1 Herman Wade, SE SW NE 14-5s-14w, also in Posey County, which was given a 1-hour drill-stem test in Hardensburg sand at 2,446-65 ft., developing 1,380 ft. of oil and 60 ft. of oil-cut mud, and no water.

Seven new oil wells, all in known pools, were reported completed during the week. One gas well and three dry holes were also listed.

OHIO

ZANESVILLE, Ohio. — Preston Oil completed its north offset to the discovery well on the Maria Schneider tract in Section 13, Wayne Township, Muskingum County. The well made 150 bbl. from the Clinton at 3,882-3,940 ft. An offset location has been staked to the north.

The Wheeling Oriskany pool was extended ½ mile to the southwest by Ohio Fuel's W. E. Black well in Section 1, Knox Township, Guernsey County. The well gaged 1,870,000 cu. ft. at 3,369-3,376 ft.

OHIO WILDCAT COMPLETION

Coshocton County, Washington Township: Lacknette 1 W. Featherolf, Sec. 20, Clinton 3,561-3,624 ft., dry, T. D. 3,748 ft.

WESTERN KENTUCKY

OWENSBORO, Ky.—The Hitesville pool in Union County was extended by Carter Oil Co. 1 C. N. Buckman, which flowed oil from Cypress sand at 2,247-62 ft. after an 80-minute drill-stem test. In the Uniontown pool in the same county, E. J. Ruwaldt 1 P. Negley Community got 1,000 ft. of oil, 100 ft. of oil-cut mud and 30 ft. of salt water in a drill-stem test of Cypress sand at 2,184 to 2,214 ft. Hiawatha Oil & Gas completed 6 Uniontown, in Cypress sand at 2,183-94 ft. and it is estimated good for 400 bbl. per day.

Dobbs Oil & Gas Co., Dallas, Tex., has started a wildcat test in Adair County, Kentucky, in the southern part of the state. Location is on the Ralph Corbin property, near the Green River.

WESTERN KENTUCKY WILDCAT COMPLETIONS

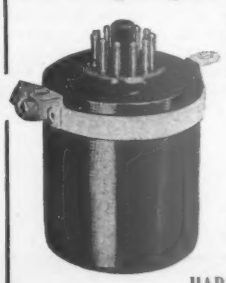
Henderson County: Sun Oil 1 Julius Fohs, dry at 2,673 ft. Menard 1,679 ft., Cypress 2,249 ft., Ste. Genevieve 2,536 ft., McClosky 2,620-30 ft.

Woods & Lacy 1 Bauldauf, 4 mi. NW of Geneva, pumped 24 bbl. Tar Springs

LEGAL

UNITED STATES DEPARTMENT OF AGRICULTURE, Soil Conservation Service, Milwaukee, Wisconsin, December 13, 1943. Sealed bids in triplicate will be received until 2:30 p.m., CWT., January 15, 1944, and then publicly opened, offering bonus for operating rights in connection with gas and oil leases on land in the North Muskegon Sand Dunes Project, MI-LU-21, located in Muskegon County, Michigan. T. 12 N., R. 17 W., Tract 50, W½ of SE¼, sec. 35; Tract 55, NE¼ of SW¼, sec. 36; Tract 272, NE¼ NW¼, sec. 25; Tract 274, E½ of SW¼ and SW¼ of SW¼, sec. 25; Containing 280 acres. Award of lease will be made only to bidder who can show sufficient experience and financial resources and prove citizenship. Interested parties may obtain bid documents, lease forms, and operating regulations from James Scammahorn, Chief, Regional Administrative Services Division, Soil Conservation Service, 809 North Broadway, Milwaukee 2, Wisconsin.

Geophysical Transformers



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sand 1,873-87 ft., T.D. 2,317 ft.

Union County: Paul Luhring et al 1 T. L. Spaulding pumped 110 bbl. oil and 100 bl. water in 11 hours from McClosky lime at 2,647-51 and 2,662-66 ft., T.D. 2,739 ft.

OKLAHOMA

McClain County Test Has Show of Oil in Sand

CARTER OIL CO.'S two deep tests in McClain County were being watched closely as the week ended. The 1 Johnson Ranch in 13-8n-4w, found a show of oil in Pennsylvanian sand around 8,900 ft. and attempted two drill-stem tests but the packer failed. Drilling was then continued and on last report it was below 9,103 ft. The 1 Cottingham in 4-7n-3w, was still in the Viola lime, making headway very slowly at 10,308 ft.

Garvin County.—The southeast corner of Pauls Valley has apparently been defined by small wells and a dry hole. Last week, in the NW SW SW of Section 32, Cities Service Oil Co. found a new type of crude at its 1 Jacobs. In a drill-stem test at 4,221-4,325 ft. it recovered 1,620 ft. of a tar-like substance and then flowed 85 bbl. of 6.3-gravity oil, by heads, in 9 hours. The oil is said to be the lowest gravity found in the southwest and while there is enough gas to flow the well, the oil congeals in the tanks when cool. Offsetting this well to the northeast, Phillips Petroleum Co. 2 Mauldin recovered 720 ft. of heavy black oil at 4,208-4,311 ft. but abandoned it at that depth. At the west center of the field, Mid-Continent 2 Campbell, NW SE NE 36-4n-1w, was completed at 2,000,000 cu. ft. of gas. This well, however, has production one location to the west of it but found the Bromide dry at 4,048 ft., the water level at 4,084 ft. and plugged back to 3,925 ft. Gas is in the Pennsylvanian sand at 3,820-48 ft. With these wells on the southeast and southwest, future development will continue to the northwest where large two-zone completions are being made. Recently there was an indication of a trend to the east but the wells are comparatively small.

OKLAHOMA WILDCAT COMPLETIONS

Beckham County: Oklahoma Nat. Gas 1 Freeman, NW NE 7-9n-21w, dry, T.D. 5,033 ft., dolomite 3,740 ft., Dense 4,457 ft.

Kay County: Tide Water 1 Hutton, SE SW SW 17-28n-1w, dry, T.D. 3,722 ft., Misener 3,493 ft., show oil, Wilcox 3,499 ft.

Okfuskee County: Danciger 1 Palmer, NE NE SE 31-11n-9e, 8,500,000 cu. ft. gas, Cromwell 3,374-81 ft., R.P. 1,050 lb.

Pottawatomie County: W. A. Delaney 1 Fundes, SW SW 17-6n-3e, dry, T.D. 3,232 ft., Layton 3,220 ft.

Seminole County: Mid-Continent 1 Willmatt, NE NE SW 31-9n-8e, dry, T.D. 4,575 ft., Cromwell 3,499 ft., Viola 4,400 ft., Wilcox 4,485 ft.

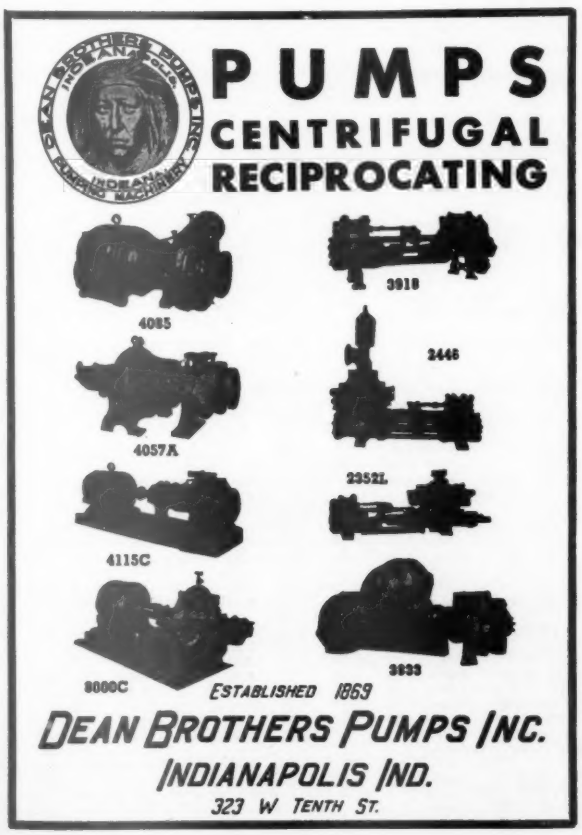
OPA Raises Prices of Crude In Louisiana and Michigan

WASHINGTON, D. C.—Office of Price Administration will lift crude prices in certain fields of Michigan and southern Louisiana under a program designed to bring them into line with prices for similar crudes elsewhere.

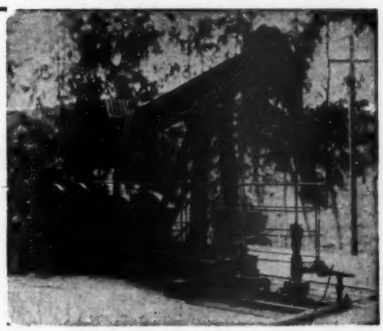
All gravities of crude in the Travis sand zone in Michigan will be increased from a flat price of $1.39 to $1.48 a barrel. The increased Louisiana price will average $1.30 for 40-gravity crude. The increases are based comparatively on present refinery margins, and will be effected through Amendment 5 to Price Regulation 436. In both cases the increase will be absorbed by refiners.

The decision was made after a study by OPA of oil fields in the two states, including a breakdown of refinery yields of the different gravities of oil. A similar study of current prices and yields is under way for Arkansas fields with the strong possibility of increases in that area soon.

The further breakdown of Revised Price Schedule 88 has been delayed until January 1 by OPA lawyers, but has been committed definitely for that date. This will provide two simplified regulations for gasoline, fuel oil and lubricants.



Nice Christmas Present!



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CRUDE PRICES

OKLAHOMA AND KANSAS GRAVITY TABLES

	1	2	3	4	5	6
Below 21				$.85	$.85	
21-21.9				.87	.87	
22-22.9				.89	.89	
23-23.9				.91	.91	
24-24.9				.93	.93	
Below 25	$.92					
25-25.9	.95	$.95		.95	.95	
26-26.9	.97	.97		.97	.97	
27-27.9	.99	.99		.99	.99	
28-28.9	1.01	1.01	$1.01	1.01	1.01	
29-29.9	1.03	1.03	1.03	1.03	1.03	
30-30.9	1.05	1.05	1.05	1.05	1.05	$1.05
31-31.9	1.07	1.07	1.07	1.07	1.07	1.07
32-32.9	1.09	1.09	1.09	1.09	1.09	1.09
33-33.9	1.11	1.11	1.11	1.11	1.11	1.11
34-34.9	1.13	1.13	1.13	1.13	1.13	1.13
35-35.9	1.15	1.15	1.15	1.15	1.15	1.15
36-36.9	1.17	1.17	1.17	1.17	1.17	1.17
37-37.9	1.19	1.19	1.19	1.19	1.19	1.19
38-38.9	1.21	1.21	1.21	1.21	1.21	1.21
39-39.9	1.23	1.23	1.23	1.23	1.23	1.23
40 and above	1.25	1.25	1.25	1.25	1.25	1.25

OKLAHOMA FLAT PRICE

Cumberland	$1.14

Pure Oil Co., 9-4-41.

OKLAHOMA AND KANSAS TABLE EXPLANATION

Column 1 Mid-Continent grades:
Pure Oil Co., 5-20-41.
Gulf Oil Corp., 5-20-41.
Skelly Oil Co. (Kansas only), 5-19-41.
H. F. Wilcox Oil & Gas Co., 5-20-41.
Gulf, in Jackson and Tillman counties, Oklahoma, effective 9-11-43.

Column 2 Mid-Continent grades:
White Eagle Oil Purchasing Co., Inc., 5-19-41, Kansas only.
Sinclair Prairie Oil Marketing Co., 5-20-41.

Column 3 Mid-Continent grades:
Continental Oil Co., 5-19-41.
Phillips Petroleum Co., 5-19-41.
Tide Water Associated Oil Co., 5-20-41.

Column 4 Mid-Continent grades:
Standard Oil Co. (Indiana), 5-20-41.
National Refining Co., 5-20-41.
Carter Oil Co.

Column 5 Mid-Continent grades:
Magnolia Petroleum Co., 10-1-43.
Shell Oil Co., Inc., 10-1-43.
Ben Franklin Refining Co., 9-7-43.

Column 6 Oklahoma:
Champlin Refining Co., 5-20-41.

LOUISIANA AND SOUTHERN ARKANSAS TABLE EXPLANATION

Standard Oil Co. of Louisiana, 5-22-41.

Column 1 applies to Atlanta, Buckner, Magnolia, Sahuler (Jones sand), Village, and Lewisville fields.

Column 2 applies to De Soto, Sabine, Fouke, Homer, Miller County, Sugar Creek, and Nebo.

Column 3 applies to Little Creek, Olla, and South Olla (4-3-43).

Column 4 applies to Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, North Crowley, South Crowley, Port Barre, Potash, Roanoke, St. Martinville, and Port Allen.

Column 5 applies to University (Baton Rouge). Posted 6-2-42.

Column 6 applies to Cotton Valley crude, Rodessa and Shreveport (Cross Lake); also Anse La Butte, effective 8-1-41, starting at 90 cents for below 21°, also to Caddo effective 10-15-41.

Continental Oil Co., 5-21-41.

Column 7 applies to Abbeville, Louisiana

Stanolind Oil & Gas Co., 5-21-41.

Column 8 applies to East and West Hackberry.

Column 6 applies to Caddo Parish, effective 10-15-41.

Column 9 applies to Evangeline, Acadia Parish.

Lion Oil Refining Co., 5-22.41.

Column 1 applies to Reynolds lime, Jones sand, Schuler, Ark.

Column 2 applies to El Dorado, West and South Rainbow fields, Snow Hill, and Schuler-Morgan sand.

Placid Oil Co., 5-22-41.

Column 3 applies to Olla.

Column 2 applies to Nebo field

Shell Oil Co., Inc., 5-20-41.

Column 10 applies to Roanoke, Chalkley

Column 11 applies to Iowa, Black Bayou, White Castle.

Column 12 applies to Gibson, South Houma, Hester, West Lake Verret.

Magnolia Petroleum Co., 5-21-41.

Column 13 applies to Lockport, Cameron Meadows, and West Gueydan, La.

Column 6 applies to Haynesville, Cotton Valley, Rodessa, La., and Miller County, Arkansas.

Phillips Petroleum Co., 3-29-41.

Arkansas Fuel Oil Co., 2-19-42.

Column 1, Schuler (Jones sand), except schedule starts at 76 cents for below 25° gravity.

Gulf Refining Co., 5-21-41.

Column 9, Jennings.

Column 8, Edgerly, Starks, Vinton, East Hackberry, Cameron Meadows, and Leesville.

Column 16 applies to Grand Bay, Quarantine Bay, Timbalier Bay, and West Bay, except schedule starts at $1.12 for below 28° gravity.

Column 6 applies to Caddo, Homer, Bull Bayou, Crichton, De Soto, Haynesville, and El Dorado.

Column 4 applies to West Gueydan, effective 5-25-42.

Pure Oil Co., 4-22-41.

Column 14 applies to Gueydan crude.

Column 6, Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, and El Dorado.

Texas Co., 5-21-41.

Column 6 applies to North Louisiana.

Columns 15 and 16, Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville, Port Barre. (Schedules A and B).

Column 17, Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club.

Column 18, Delta Farm, Lake Salvador, Golden Meadow.

Allied Pipe Line Corp.

Column 2 applies to Pickens, Mississippi, 9-8-43.

LOUISIANA AND ARKANSAS FLAT PRICES

Continental Oil Co.:	
Tepetate and Lake Arthur, 5-21-41	$1.18
Ville Platte, 5-22-43	1.30
Bear, 5-15-43	1.30
Gulf Refining Co., 5-21-41:	
Smackover (Ark.)	$0.83
Lion Refining Co., 5-22-41:	
Smackover (heavy)	$0.83
Dorcheat	1.15
Phillips Petroleum Co., 5-22-41:	
Smackover (heavy)	$0.83
Placid Oil Co., 5-22-41:	
Tullos-Urania (5-21-41)	$1.15
Cotton Valley dist. (above 60°)	1.30
Cotton Valley (Holloway sand)	1.25
Cotton Valley (Bodcaw-D sands)	1.20
Pure Oil Co.:	
Bosco (5-21-41)	$1.14
Sweet Lake (5-22-41)	1.06
Creole (5-22-41)	1.16
Republic Oil Co., 6-2-41:	
Nevada County, Arkansas	$0.80
Republic Oil Refining Co., 5-21-41:	
Bayou Pigeon	$1.20
Shell Oil Co., Inc., 5-20-41:	
Happytown	$1.15
Standard Oil Co. of Louisiana, 5-22-41:	
Big Creek, Dorcheat, McKamie, Columbia, Macedonia (sour) (2-3-43)	$1.25
Smackover (heavy)	0.83
Cotton Valley distillate (9-1-41)	1.40
Cotton Valley (Holloway sand)	1.25
Lisbon distillate	$1.20
Texas Co., 5-21-41:	
Erath	$1.21
Garden Island	1.36
Lafitte, Paradis	1.19
Lake Mongoulois	1.36

MIDDLE WEST FLAT PRICES
Illinois and Indiana

Ohio Oil Co.:	
Illinois basin, 5-21-41	$1.37
Eastern Illinois, 5-21-41	$1.23
Western Indiana, 5-21-41	1.23
Magnolia Petroleum Co.:	
Illinois basin, 5-21-41	$1.37
Carter Oil Co.:	
Illinois (Louden), 5-21-41	$1.37
Sohio Corp.:	
Illinois basin, 5-21-41	$1.37

LOUISIANA, MISSISSIPPI AND SOUTHERN ARKANSAS GRAVITY TABLE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Below 18													$.94					
18-18.9													.96					
19-19.9													.98					
Below 20								$1.06		$.94	$.99	$.89			$1.06			
20-20.9								1.08		.96	1.01	91	1.00		1.08			
Below 21	$.68			$.90										$.90				
21-21.9	.70			.92				1.10		98	1.03	93	1.02	.92	1.10			
22-22.9	.72			.94				1.12		1.00	1.05	.95	1.05	.94	1.12			
23-23.9	.74			.97				1.14		1.02	1.07	97	1.08	96	1.14			
24-24.9	.76			.98				1.16		1.04	1.09	.99	1.11	.98	1.16			
Below 25		$.86	$1.03			$.98												
25-25.9	78	88	1.05	1.00		90		1.18		1.06	1.11	1.01	1.14	1.00	1.18			
26-26.9	80	.90	1.07	1.02		.92		1.20		1.08	1.13	1.03	1.17	1.02	1.20			
27-27.9	82	.92	1.09	1.04		94		1.22		1.10	1.15	1.05	1.19	1.04	1.22			
28-28.9	84	.94	1.11	1.06		96		1 24		1 12	1.17	1.07	1.21	1.06		$1.14	$1.06	
29-29.9	86	.96	1.13	1.08		98		1.2-		1.14	1.19	1.09	1.23	1.08		1.16	1.08	
30-30.9	88	.98	1.15	1.10	$1.28	1.00		1.2-		1.16	1.21	1.11	1.25	1.10		1.18	1.10	$1.05
31-31.9	90	1.00	1.17	1.12	1.30	1.02		1.30	$1.07	1.18	1.23	1.13	1.27	1.12		1.20	1.12	1.07
32-32.9	92	1.02	1.19	1.14	1.32	1.04		1.32	1.09	1.20	1.25	1.15	1.29	1.14		1.22	1.14	1.09
33-33.9	94	1.04	1.21	1.16	1.34	1.06		1 34	1.11	1.22	1.27	1.17	1.31	1.16		1.24	1.16	1.11
34-34.9	96	1.06	1.23	1.18	1.36	1.08		1.3-	1.13	1.24	1.29	1.19	1.33	1.18		1.26	1.18	1.13
35-35.9	98	1.08	1.25	1.20	1.38	1.10			1.15					1.20		1.28	1.20	1.15
Below 36							$1.07											
36-36.9	1.00	1.10	1.27	1.22	1.40	1.12	1.09		1 17					1 22		1 30	1 22	1.17
37-37.9	1.02	1.12	1.29	1.24	1.42	1.14	1.11		1 19									1.19
38-38.9	1.04	1.14	1.31	1.26	1.44	1.16	1.13		1.21									1.21
39-39.9	1.06	1.16	1.33	1.28	1.46	1.18	1.15		1.23									1.23
40 and above	1.08	1.18	1.35	1.30	1.48	1.20	1.17		1 25									1.25

Texas Co.:
Illinois basin, 5-21-41 ..... $1.3
Gulf Refining Co.:
Illinois basin, 5-21-41 ..... $1.3

Michigan

Simrall Corp., 5-27-41:
Greendale, Porter, Vernon, Crystal and Wise $1.44
Buckeye, Bentley, Edenville, Beaverton, and Monitor (sweet) 1.42

Freeman, Redding, Lincoln and Winterfield 1.3
Hamilton-Grout 1.2
West Branch-Arenac 1.24
Sohio Corp., 5-1-41:
Bloomingdale-Columbia $1.45
Mid-West Refineries, Inc., 5-1-41:
Kent County $1.38
Pure Oil Co., 5-27-41:
Sherman $1.39
Midland (Midland County) 1.44

SOUTH TEXAS AND SOUTHWEST TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7
Below 20	$1.03	$1.08	$1.08	$.89	$1.03	$1.03	$1.08
20-20.9	1.05	1.10	1.10	.90	1.05	1.05	1.10
21-21.9	1.07	1.12	1.12	.91	1.07	1.07	1.12
22-22.9	1.09	1.14	1.14	.92	1.09	1.09	1.14
23-23.9	1.11	1.16	1.16	.93	1.11	1.11	1.16
24-24.9	1.13	1.18	1.18	.94	1.13	1.13	1.18
25-25.9	1.15	1.20	1.20	.95	1.15	1.15	1.20
26-26.9	1.17	1.22	1.22	.96	1.17	1.17	1.22
27-27.9	1.19	1.24	1.24	.97	....	1.19	1.24
28-28.9	1.21	1.26	1.26	.98	....	1.21	1.26
29-29.9	1.23	1.28	....	.99	....	....	1.28
30-30.9	1.25	1.30	....	1.00	....	....	1.30
31-31.9	1.27	1.32	....	1.01	....	....	1.32
32-32.9	1.29	1.34	....	1.02	....	....	1.34
33-33.9	1.31	1.36	....	1.03	....	....	1.36
34-34.9	1.33	1.38	....	1.04	....	....	1.38
35-35.9	1.35	1.40	....	1.05	....	....	1.40
36-36.9	1.37	1.42	....	1.06	....	....	....
37-37.9	1.39	1.44	....	1.07	....	....	....
38-38.9	1.41	1.46	....	1.08	....	....	....
39-39.9	1.43	1.48	....	1.09	....	....	....
40 and above	1.45	1.50	....	1.10	....	....	....

SOUTH TEXAS AND SOUTHWEST TEXAS TABLE EXPLANATION

Column 1 Mirando:
Humble Oil & Refining Co., 5-21-41, includes Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North and South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.
Magnolia Petroleum Co., 5-21-41.
Continental Oil Co., 7-1-41, includes Hoffman, Government Wells (North and South), Lopez, Moco, Colmena, Seven Sisters, South Seven Sisters, Loma Novia, Conoco, Driscoll, O'Hern, Piedra Lumbre, and Taranchauas.
American Mineral Spirits Co., 5-21-41, includes Adami and Munson.
Republic Oil Refining Co., 5-21-41, includes Heyser field crude.

Column 2 Refugio:
Continental Oil Co., 7-1-41, includes Minnie Bock, Clara Driscoll, South Clara Driscoll, Driscoll Ranch, Orange Grove and Wade City.
Humble Oil & Refining Co., 5-21-41, includes East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth Saxet, Taft, and Tom O'Connor.
American Mineral Spirits Co., 5-21-41, includes Plymouth, Taft, and East White Point.

Column 3 Refugio:
Texas Co., 5-21-41, includes Greta, Saxet, and Taft.

Column 4 La Rosa:
American Mineral Spirits Co., 3-29-41.

Column 5 Duval-Mirando:
Sun Oil Co., 5-21-41.

Column 6 Duval-Mirando:
Texas Co., 5-21-41.

Column 7 Nueces County:
American Mineral Spirits Co., 5-21-41
Republic Oil Refining Co., 5-21-41.

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7	8	9
Below 20	....	....	....	....	$0.80	....	....	....	$0.80
20-20.9	....	....	....	....	.82	....	....	....	.82
Below 21	....	....	....	....	....	$0.85	....	....	....
21-21.9	....	....	....	....	.84	.87	....	....	.84
22-22.9	....	....	....	....	.86	.89	....	....	.86
23-23.9	....	....	....	....	.88	.91	....	....	.88
24-24.9	....	....	....	....	.90	.93	....	....	.90
Below 25	....	....	....	$0.88	....	....	$0.89	$0.95	....
25-25.9	$0.95	....	.90	.90	$0.97	.92	.95	.91	.97	.92
26-26.9	.97	....	.92	.92	.99	....	.97	.93	.99	.92
27-27.9	.99	....	.94	1.01	....	.99	.95	1.01	....	.92
28-28.9	1.01	$1.01	.96	1.03	....	1.01	.97	1.03	....	.92
29-29.9	1.03	1.03	.98	1.05	....	1.03	.99	1.05	....	.92
30-30.9	1.05	1.05	1.00	1.07	....	1.05	1.01	1.07	....	.92
31-31.9	1.07	1.07	1.02	1.09	....	1.07	1.03	1.09	....	.92
32-32.9	1.09	1.09	1.04	1.11	....	1.09	1.05	1.11	....	.92
33-33.9	1.11	1.11	1.06	1.13	....	1.11	1.07	1.13	....	.92
34-34.9	1.13	1.13	1.08	1.15	....	1.13	1.09	1.15	....	.92
35-35.9	1.15	1.15	1.10	1.17	....	1.15	1.11	1.17	....	.92
36-36.9	1.17	1.17	1.12	1.19	....	1.17	1.13	1.19	....	.92
37-37.9	1.19	1.19	1.14	1.21	....	1.19	1.15	1.21	....	.92
38-38.9	1.21	1.21	1.16	1.23	....	1.21	1.17	1.23	....	.92
39-39.9	1.23	1.23	1.18	1.25	....	1.23	1.19	1.25	....	.92
40 and above	1.25	1.25	1.20	1.27	....	1.25	1.21	1.27	....	.92

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS TABLE EXPLANATION

Column 1 West Central and North:
Humble Oil & Refining Co., 5-22-43, includes Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, and Throckmorton counties.
Panhandle Refining Co., 5-22-43, in Leuders area.
Gulf Refining Co., 5-22-43.
Sinclair Prairie Oil Marketing Co., 5-22-43.

Column 2 North Texas:
Continental Oil Co., 5-22-43.
Magnolia Petroleum Co., 5-22-43.
Panhandle Refining Co., 5-22-43.
Bell Oil & Gas Co., 5-22-43.
Texas Co., 5-22-43.

Column 3 East Central:
Magnolia Petroleum Co., 5-21-41, includes Cass, Panola, and Rodessa (Texas and Louisiana), and Miller County, Arkansas.
Gulf Refining Co., 5-21-41, includes Rodessa, Texas.

Column 4 East Central:
Humble Oil & Refining Co., 5-21-41, includes Anderson, Cherokee, Limestone, and Navarro counties and the Navarro Crossing field.

Column 5 East Central:
Humble Oil & Refining Co., 5-21-41, includes Hawkins field.

Column 6 North Texas:
Stanolind Oil Purchasing Co., 5-22-43.

Column 7 Fisher County:
Shell Oil Co., Inc., 12-11-41.

Column 8 Mexia:
Sinclair Prairie Oil Marketing Co., 5-30-41.

Column 9 Talco:
Magnolia Petroleum Co., 5-28-43.
Humble Oil & Refining Co., 5-28-43.

TEXAS GULF COAST GRAVITY TABLES

	(1)	(2)	(3)	(4)	(5)
Below 20	$1.06	$1.06	....	$0.98	$0.93
20-20.9	1.08	1.08	....	1.00	.95
Below 21	....	....	$1.08	....	....
21-21.9	1.10	1.10	1.10	1.02	.97
22-22.9	1.12	1.12	1.12	1.04	.99
23-23.9	1.14	1.14	1.14	1.06	1.01
24-24.9	1.16	1.16	1.16	1.08	1.03
25-25.9	1.18	1.18	1.18	1.10	1.05
26-26.9	1.20	1.20	1.20	1.12	1.07
27-27.9	1.22	1.22	1.22	1.14	1.09
28-28.9	1.24	1.24	1.24	1.16	1.11
29-29.9	1.26	1.26	1.26	1.18	1.13
30-30.9	1.28	1.28	1.28	1.20	1.15
31-31.9	1.30	1.30	1.30	1.22	1.17
32-32.9	1.32	1.32	1.32	1.24	1.19
33-33.9	1.34	1.34	1.34	1.26	1.21
34-34.9	1.36	1.36	1.36	1.28	1.23
35-35.9	1.38	....	1.38	1.30	1.25
36-36.9	1.40	....	1.40	1.32	1.27
37-37.9	1.42	....	1.42	1.34	1.29
38-38.9	1.44	....	1.44	1.36	1.31
39-39.9	1.46	....	1.46	1.38	1.33
40 and above	1.48	....	1.48	1.40	1.35

TEXAS GULF COAST GRAVITY TABLE EXPLANATION

Column 1:
Humble Oil & Refining Co., 5-21-41, includes Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa (new), Raccoon Bend, South Thompson, Sugarland, Thompson, and Webster fields.
Stanolind Oil & Gas Co., 5-21-41, includes West Beaumont, High Island, and Spindletop.
Sinclair Prairie Oil Marketing Co., 5-21-41.
Stanolind Oil Purchasing Co., 4-9-42, includes Clinton and Lake Creek.
Pure Oil Co., 4-21-41, includes Louise and Ganado.
Gulf Refining Co., 5-21-41, includes Spindletop, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompson, Lochridge, Dyersdale, and Hull (old).
Sun Oil Co., 5-21-41, includes Barbers Hill, Batson (old), Bayou Blue, Chacahoula, Cotton Lake, Esperson (below 35° gravity), Fausse Point, Goose Creek, Greens Lake, Hackberry (east and west), Hull (below 35°), Humble (below 35°), Nome, North Dayton (below 25°), Orange, Saratoga, Sour Lake, South Liberty, and Vinton.

Column 2:
Texas Co., 5-21-41, includes Arriola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, and Withers.

Column 3:
Pan American Production Co., 5-21-41, includes Hastings and South Houston.
Stanolind Oil & Gas Co., 4-1-41, includes High Island, Spindletop, Hastings, and South Houston.

Column 4:
Humble Oil & Refining Co., 5-21-41, includes Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (new and old), Pierce Junction, Red Fish Reef, and Turtle Bay.
Gulf Refining Co., 5-21-41, includes Anahuac, Hull (new), Thompson (deep), Pierce Junction, and Orange.
Sun Oil Co., 5-21-41, includes Anahuac, Caplen and Turtle Bay.
Humble Oil & Refining Co., 3-29-41, includes Dickinson, Gillock, Hardin, League City, and Rowan.
Pure Oil Co., 2-23-43, at Alief field.

Column 5:
Pan American Production Co., 5-21-41, includes Gillock, except scale starts at 95 cents below 21°.
Stanolind Oil Purchasing Co., 5-21-41, includes Fairbanks, North Houston, and Roslyn.

TEXAS FLAT-PRICE FIELDS

Agua Dulce (light), Benavides, Longhorn, Southland, and Sweden, 5-21-41 ..... $1.39
Agua Dulce (heavy), 10-16-41 ..... $1.36
Republic Oil Refining Co., 5-21-41.
Alfred and Magnolia City $1.35
Continental Oil Co., 5-21-41.
Alice, Benavides (North Sweden), Ben Bolt, Clark-Muil, Sun, and Tom Graham $1.35
Humble Oil & Refining Co., 5-21-41.
Batson (new), Humble (35° and above) Fig Ridge, Hardin, Hull (25° and above), La Belle, North Dayton (25° and above), Seabreeze South China, West Orange, Willow Slough and Oyster Bayou $1.25
Sun Oil Co., 5-21-41.
Cass County $1.20
Texas Co., 5-21-41.
Cayuga, Anderson County $0.90
Pan American Production Co., 5-21-41.

Chapel Hill, Smith County:
Crude distillate $1.30
Crude oil 1.18
Chapel Hill Gas System, 11-7-41.

Clay Creek, Washington County $1.06
Sun Oil Co., 5-21-41.

Cleveland, Liberty County $1.26
Magnolia Petroleum Co., 5-21-41.

Conroe, Montgomery County $1.43
Humble Oil & Refining Co., 5-21-41.
Tide Water Associated Oil Co., 5-21-41.
Sun Oil Co., 5-21-41.
Texas Co., 5-21-41.

Cotton Lake (South) $1.35
Sun Oil Co., 5-21-41.

East Texas and Flag Lake* $1.25
*Humble Oil & Refining Co., 5-21-41.
Pan American Production Co., 5-21-41.
Tide Water Associated Oil Co., 5-21-41.
Gulf Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
Sinclair Prairie Oil Marketing, 5-21-41
Shell Oil Co., Inc., 5-20-41.
Sun Oil Co., 5-21-41.
Texas Co., 5-21-41.
Stanolind Oil Purchasing Co.

Esperson (35° and above), South Esperson $1.30
Sun Oil Co., 5-21-41.

Flour Bluff, East Flour Bluff $1.33
Humble Oil & Refining Co., 5-21-41.

Hockley and Cochran $0.87
Texas Co., 5-21-41.

Livingston and Mercy $1.25
Shell Oil Co., Inc., 5-20-41.

Long Lake $1.23
Sinclair Prairie Oil Marketing, 5-21-41.

Luby $1.35
American Mineral Spirits Co., 5-21-41.

Luling $1.05
Magnolia Petroleum Co., 5-21-41.

Lytton Springs $1.17
Magnolia Petroleum Co., 5-21-41.

Salt Flat, North Salt Flat, Darst Creek*, Hilbig, Clark, Carroll and Zoborski $1.41
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
*Texas Co., 5-21-41.

Rincon (North), Sun, North Sun and Garcia $1.35
Sun Oil Co., 5-21-41.

Yturria $1.45
Sun Oil Co., 3-19-42.

Talco $0.79
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.

Tomball and Satsuma $1.40
Humble Oil & Refining Co., 5-21-41.
*Magnolia Petroleum Co., 5-21-41.
Stanolind Oil Purchasing Co., 4-1-41.

Van, Van Zandt County $1.08
Humble Oil & Refining Co., 5-21-41.
Pure Oil Co., 5-21-41.

Yates (regular) $0.95
Humble Oil & Refining Co., 5-21-41.
Gulf Refining Co., 5-21-41.
Shell Oil Co., Inc., 5-20-41.

Yates (shallow) $0.82
Shell Oil Co., Inc., 5-20-41.

WEST TEXAS, PANHANDLE, AND NEW MEXICO GRAVITY TABLES

	1	2	3	4	5	6	7	8	9	10	11
Below 20	$0.70	....	....	....	....	....	....	....	$0.70	$0.80	....
20-20.9	.72	....	....	....	....	....	....	....	.72	.82	....
21-21.9	.74	....	....	....	....	....	....	....	.74	.84	....
22-22.9	.76	....	....	....	....	....	....	....	.76	.86	....
23-23.9	.78	....	$0.78	....	....	....	....	....	.78	.88	....
24-24.9	.80	....	.80	....	....	....	....	....	.80	.90	....
Below 25	....	$0.90	....	....	....	....	$0.90	....	....	....	$0.90
25-25.9	.83	.83	.83	....	$0.83	....	.83	....	.83	.93	.93
26-26.9	.84	.84	.84	....	.84	....	.84	....	.84	.94	.94
27-27.9	.86	.86	.86	....	.86	....	.86	....	.86	.96	.96
28-28.9	.88	.88	.88	$0.96	.86	....	.88	$0.88	.88	.98	.96
29-29.9	.90	.90	.90	1.00	.90	....	.90	.90	.90	1.00	1.00
30-30.9	.92	.92	.92	1.02	.92	....	.92	.92	.92	1.02	1.02
31-31.9	.94	.94	.94	1.04	.94	....	.94	.94	.94	1.04	1.04
32-32.9	.96	.96	.96	1.06	.96	....	.96	.96	.96	1.06	1.06
33-33.9	.98	.98	.98	1.08	.98	....	.98	.98	.98	1.08	1.08
34-34.9	1.00	1.00	1.00	1.10	1.00	1.10	1.00	1.00	1.00	1.10	1.10
35-35.9	1.02	1.02	1.02	1.12	1.02	1.12	1.02	1.02	1.02	1.12	1.12
36-36.9	1.04	1.04	1.04	1.14	1.04	1.14	1.04	1.04	1.04	1.14	1.14
37-37.9	1.06	1.06	....	1.16	1.06	1.16	....	1.06	....	1.16	1.16
38-38.9	1.08	1.08	....	1.18	1.08	1.18	....	1.08	....	1.18	1.18
39-39.9	1.10	1.10	....	1.20	1.10	1.20	....	1.10	....	1.20	1.20
40 and above	1.12	1.12	....	1.22	1.12	1.22	....	1.12	....	1.22	1.22

WEST TEXAS, PANHANDLE AND NEW MEXICO TABLE EXPLANATION

Column 1:
Humble Oil & Refining Co., 5-21-41, includes Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, and Yoakum counties, West Texas, and Lea County, New Mexico.
Gulf Refining Co., 5-21-41, includes Crane, Ector, Upton, Ward, and Winkler counties, West Texas.
Stanolind Oil Purchasing Co., 5-1-43, at Slaughter and Cedar Lake.

Column 2:
Sinclair Prairie Oil Marketing Co., 5-21-41, includes West Texas and Lea County, New Mexico. Effective 5-29-41, in Eddy County, New Mexico.
Magnolia Petroleum Co., 5-21-41, includes Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum and Gaines counties.

Column 3:
Texas Co., 5-21-41, includes Crane and Winkler counties, Texas, and Lea County, New Mexico.

Column 4 Texas Panhandle:
Magnolia Petroleum Co., 6-16-43.
Continental Oil Co., 6-16-43.*
Phillips Petroleum Co., 6-16-43.*
*Starts at $1 for 29-29.9.

Column 5 Winkler and Lea:
Stanolind Oil & Gas Co., 5-21-41, includes Winkler County only.
Gulf Refining Co., 5-21-41, includes Lea County, New Mexico, only.

Column 6 Gray County:
Texas Co., 6-16-43.
H. F. Wilcox Oil & Gas Co., 6-16-43.

Column 7 Lea County:
Magnolia Petroleum Co., 5-21-41

Column 8 Eddy County:
Continental Oil Co., 5-30-41.

Column 9:
Shell Oil Co., Inc., 5-20-41, includes Crane Ector, Howard, Glasscock, Upton, Winkler, and Yoakum counties, Texas, and Lea County, New Mexico.

Column 10 Texas Panhandle:
Humble Oil & Refining Co., 6-16-43
Gulf Refining Co., 6-16-43.

Column 11 Panhandle:
Sinclair Prairie Oil Marketing Co. 6-16-43

CANADIAN FIELDS

Imperial Oil, Ltd.:
Petrolia, 11-6-39 ..... $2.10
Oil Springs, 11-6-39 ..... 2.07
Bothwell, 11-6-39 ..... 2.10
Turner Valley, 7-16-41 ..... $1.36-1.97

EASTERN STATES

Pennsylvania and Ohio

South Penn Oil Co.:
National lines, 3-26-42 ..... $3.00
Southwest Penn, 3-26-42 ..... 2.88
Eureka lines, 3-26-42 ..... 2.89
Corning grade, 5-27-41 ..... 1.31

Tide Water Associated Oil Co.:
Bradford, 3-26-42 ..... $3.00
Allegany, N. Y., 3-26-42 ..... 3.00

Pennzoil Co.:
Group A, 3-26-42 ..... $2.93
Group B, 3-26-42 ..... 2.93
Group C, 3-26-42 ..... 2.91
Group D, 3-26-42 ..... 2.90
Group E, 3-26-42 ..... 2.89

Quaker State Oil Refining Corp.:
In Buckeye lines, 3-26-42 ..... $2.88
In Eureka lines, 3-26-42 ..... 2.89

Kentucky

Ashland Oil & Transportation Co., 6-19-41:
Big Sandy River (6-9-43) $1.43
Kentucky River (6-19-41) 1.43

Sohio Corp., 5-21-41:
Birk City $1.20

Western Kentucky

All purchasers, 8-9-43:
Henderson, Webster, McLean, Daviess Union and Muhlenberg counties $1.37

STANDARD OIL CO. OF CALIFORNIA CRUDE-OIL PRICES EFFECTIVE APRIL 1, 1943

Gravity	Signal Hill (Long Beach)	Wilmington	Seal Beach	Huntington Beach	Inglewood	Olinda-Brea Canyon	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills Midway-Sunset, Lakeview area	Coalinga	Kettleman Hills	Elwood Terrace
14-14.9	....	$0.93	....	$0.98	....	$0.98	$0.98	$0.95	$0.95	$0.97	....	....	....	....	....	$0.98	$0.98	....	....
15-15.9	....	.96	....	1.00	$1.01	.97	.97	.96	.97	.97	....	....	....	....	....	.98	.98	....	....
16-16.9	....	.96	....	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	....	.98	.98	....	....
17-17.9	....	.96	....	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	....	.98	.98	....	....
18-18.9	$0.93	.96	....	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	....	.98	.98	....	....
19-19.9	.93	.96	....	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	$0.98	.98	.98	....	....
20-20.9	.93	.96	....	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	.98	.98	.98	....	....
21-21.9	.93	.96	....	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	.98	.98	.98	....	....
22-22.9	.96	.96	$0.98	1.00	1.01	.97	.97	.96	.97	.97	....	....	....	....	.98	.98	.98	....	....
23-23.9	1.00	1.02	.92	1.02	1.01	.98	.97	.96	1.00	.97	....	....	....	....	.98	.99	.98	....	....
24-24.9	1.03	1.06	.97	1.05	1.04	1.01	1.01	1.02	1.03	.97	$0.99	....	....	....	.98	1.03	.98	....	....
25-25.9	1.07	1.09	1.01	1.08	1.07	1.04	1.05	1.06	1.07	.98	1.02	....	....	....	.98	1.07	.98	....	....
26-26.9	1.11	1.13	1.06	1.11	1.10	1.08	1.09	1.10	1.11	1.01	1.06	....	....	....	.98	1.11	.98	....	....
27-27.9	1.15	1.18	1.10	1.14	1.14	1.11	1.13	....	1.15	1.05	1.10	$1.04	....	....	1.01	1.15	.98	....	....
28-28.9	1.18	1.18	1.18	1.17	1.17	1.14	1.17	....	....	1.08	1.13	1.06	....	....	1.04	1.19	1.00	....	....
29-29.9	1.20	1.21	1.19	1.20	1.20	....	....	....	....	1.12	1.17	1.13	....	....	1.07	1.24	1.02	....	....
30-30.9	1.23	1.24	....	1.23	1.22	....	....	....	....	1.15	1.21	1.15	$1.01	$1.09	1.10	1.28	1.04	....	f.o.b
31-31.9	....	....	....	....	1.24	....	....	....	....	1.19	1.24	1.19	1.04	1.12	1.14	....	1.06	....	ship
32-32.9	....	....	....	....	....	....	....	....	....	1.23	1.28	1.23	1.07	1.14	1.17	....	1.09	....	....
33-33.9	....	....	....	....	....	....	....	....	....	1.27	....	1.28	1.10	1.17	....	....	1.11	....	$1.23
34-34.9	....	....	....	....	....	....	....	....	....	1.31	....	1.30	1.13	1.20	....	....	1.13	....	1.28
35-35.9	....	....	....	....	....	....	....	....	....	1.35	....	....	1.16	1.22	....	....	....	$1.23	1.28
36-36.9	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	1.25	....	....	....	1.28	....
37-37.9	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	1.28	....
38-38.9	....	....	....	....	....	....	....	....	....	1.47	....	....	1.25	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....

Standard posts 94 cents for 12 gravity and 96 cents for 13 gravity in San Joaquin fields, effective May 28, 1943.

Wildcat Completions and Discoveries

OF the eight discoveries completed last week, only three were significant wells. In Wyoming, the Gebo dome was completed at 90 bbl. of oil an hour, with all indications that it would produce as high as 200 bbl. an hour. The Gebo well, on the eastern side of the Big Horn Basin, is regarded as a major discovery of 1943.

In western Wilbarger County, North Central Texas, The Texas Co. completed its 1 Emma L. Main at 400 bbl. a day in a shallow sand. Location is some 14 miles southwest of Vernon. In Duval County, South Texas, Pan Amercian Production Co. extended Pettus sand production 2 miles east of the Bridwell field. In Liberty County, upper Gulf Coast Texas, a gas well was recompleted as an oil well and should be classed as a discovery. Drilled in as a gasser in 1935, it was not produced until this year, due to lack of market. Recently it started showing black oil and when opened flowed 204 bbl. of 41-gravity oil through choke.

WILDCAT COMPLETIONS

	Week ended December 18, 1943					Cumulative total for 1943				
	Oil	Distillate	Gas	Dry	Total	Oil	Distillate	Gas	Dry	Total
Ohio	0	0	0	1	1	4	0	24	56	84
Indiana	0	0	0	0	0	4	0	0	52	56
Kentucky	2	0	0	1	3	22	0	2	114	139
Illinois	1	0	0	12	13	79	0	3	398	480
Michigan	0	0	0	7	7	11	0	3	172	186
Kansas	0	0	0	5	5	55	0	1	358	414
Nebraska-Missouri-Iowa	0	0	0	1	1	0	0	0	26	26
Oklahoma	0	0	1	4	5	42	1	19	251	312
Texas:										
North Central	2	0	0	7	9	90	0	1	355	416
West	0	0	0	2	2	14	0	1	85	100
Panhandle	0	0	0	0	0	0	0	0	6	6
East	0	0	0	5	5	5	1	2	104	112
Gulf Coast	0	0	0	2	2	7	8	7	135	157
Southwest	1	0	2	6	9	26	11	7	366	310
Total	3	0	2	22	27	113	20	18	951	1,101
Louisiana:										
North	0	0	0	2	2	6	0	4	67	77
Gulf Coast	0	0	0	0	0	14	9	1	31	55
Total	0	0	0	2	2	20	9	5	98	132
Arkansas	0	0	0	1	1	2	0	0	61	63
Mississippi and Southeast	0	0	0	3	3	6	0	0	71	78
Montana	0	0	0	1	1	6	0	4	28	37
Wyoming	2	0	0	0	2	8	0	1	15	24
Colorado, Utah	0	0	0	1	1	0	0	1	8	9
New Mexico	0	0	0	3	3	6	0	2	29	37
California	0	0	1	3	4	7	0	10	139	156
Total United States	8	0	4	67	79	384	30	93	2,625	3,332
Total previous week	12	0	3	57	72					

Butler County 1.32
Bowling Green area 1.17

West Virginia

Pure Oil Co.:
Cabin and Kelly Creek, 3-27-42 ..... $2.56

ROCKY MOUNTAIN GRAVITY TABLE

Below 29	$0.98
29-29.9	.98
30-30.9	1.00
31-31.9	1.02
32-32.9	1.04
33-33.9	1.06
34-34.9	1.08
35-35.9	1.10
36-36.9	1.12
37-37.9	1.14
38-38.9	1.16
39-39.9	1.18
40 and above	1.20

Stanolind Oil & Gas Co., 5-20-41, includes Dutton Creek, Midway, and Salt Creek except Tensleep crude, Wyoming.
Sinclair-Wyoming Oil Co., 5-20-41, includes Salt Creek and Lost Soldier, except Tensleep crude, Wyoming.
Continental Oil Co., 5-21-41, includes Fort Collins and Wellington, Colorado.

Wyoming

Ohio Oil Co.:
Rock River (5-20-41) $1.10
Lance Creek (7-1-41) 1.12
Elk Basin and Grass Creek (light) 1.00
Elk Basin (heavy) (4-28-43) ..... .90
Grass Creek (heavy) (4-1-43) ..... .85
Stanolind Oil & Gas Co.:
Frannie (light) (4-1-43) $0.85
Frannie (heavy) (4-1-43) ..... .67
Grass Creek (light) (5-20-41) 1.00
Grass Creek (heavy) (4-1-43) ..... .85
Elk basin (5-20-41) 1.00
Salt Creek (Tensleep) (4-28-43) ..... .90
Continental Oil Co.:
Big Muddy (5-30-41) $1.08
Lance Creek (9-1-41) 1.13

Montana

Continental Oil Co., 4-1-41:
Cat Creek $1.10

Colorado

Stanolind Oil & Gas Co., 5-20-41:
Iles $1.07
Continental Oil Co., 5-21-41:
Canon City-Florence $1.06

LA.-ARK.

Large Flowing Well Completed at Haynesville

SHREVEPORT, La.—The Haynesville field, Claiborne Parish, has been inactive for some time, brought in one of its best wells of the year. Midstates Oil Corp. 1 Seegers-Whaley, in 4-23n-8w, flowed 936 bbl. of oil a day through ½-in. choke through perforations at 5,358-73 ft. Casing pressure was 775 lb. Location of the well is in the center of the north extension area, near the state line.

In the new east Holly field, DeSoto Parish, Texas Mineral Land Co. was nearing completion at its second well and announced plans for two other tests to get underway. The three wells are offsets to the discovery.

NORTH LOUISIANA WILDCAT COMPLETIONS

Bienville Parish: Mid-Continent Pet. 1 Jordan, SE SE SW 30-16n-5w, dry, T. D. 7,434 ft.
Concordia Parish: Gulf & Danciger 2-A H. G. Nelms, SE NW 68-2n-8e, dry, T. D. 9,409 ft.

MISSISSIPPI WILDCAT COMPLETIONS

Humphreys County: Gregg-Tex Gasoline Co. 1 Box est., ctr. NE SE Sec. 24-14s-4w, dry at 5,500 ft.
Copiah County: Sun Oil Co. 13-D Case Lbr. Co., (core test), ctr. SW¼ NW¼ Sec. 5-9n-6e, dry at 2,309 ft.
Jeff Davis County: Freeport Sulphur Co. 1 Ramsey Thurman, NW¼ Sec. 33-6n-19w, Oakvale dome, dry at 2,215 ft.

Red Bank Buys Controlling Interest in Seatex Oil

HOUSTON, Tex.—Red Bank Oil Co. of New York has acquired a controlling interest in Seatex Oil Corp. for a reported consideration of $1,000,000. Properties involved are listed as 21 wells in the Mission River field, Refugio County; 5 in the Midway field, San Patricio County, and 3 in the Fox field, Victoria County. Reserves acquired recently were estimated at 9,000,000 bbl. of oil and distillate.

Seatex was formed 3 years ago by T. R. Seagraves and William Morgan of Houston and John B. Mills, of Dallas, Tex. Mills is president.

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RECTORSEAL
THE POSITIVE LEAK PREVENTER

Among the Drilling Contractors

Fain Drilling Co., Oklahoma City, Okla., will drill Progress Petroleum Co. 1 J. M. Winslow, in J. P. Morris Survey, south outpost test in the Lake Creek field, Montgomery County, Texas. This is a Wilcox test and materials are being moved to the location.

Delta Drilling Co., Tyler, Tex., has assigned a heavy-duty rotary to a location in Henderson County, Texas, 5 miles south and slightly west of Chandler, where a 10,000-ft. test will be drilled on the Texas Pecan Nursery property, J. M. Arnest Survey. Location is 660 ft. out of the northeast corner of a 204-acre tract.

Lee Drilling Co., Tulsa, has contract to drill a 4,000-ft. wildcat test for Superior Oil Co. and Wiggins & Hyde at their 1 University, SW NW Section 25, Block 8, University Lands, Reagan County, Texas, which is south of the Big Lake and west of the Grayson pools.

B. G. Byars, Tyler, Tex., has contracted to drill a wildcat in Hopkins County, Texas, for Stewart Boyle, of Houston. The location will be west of Reilly Springs in the Thomas Lee Survey, southern part of the county, and it will go to the Paluxy sand at about 6,500 ft.

Eastland Oil Co., Fort Worth, Tex., headed by George Donnelly, is drilling below 2,700 ft. on Bryce McCandless 1-10 Atlantic-Cordova Union, Ellenburger wildcat test 2 miles north of Baldridge and 3½ miles south of Apco-Warner pool, Pecos County, Texas.

Houston Drilling Co., Houston, Tex., has been awarded contract to drill Salt Dome Oil Corp. 1 A. E. Martin, a wildcat 3 miles east of Arcola in the old Iowa Colony area in Brazoria County, Texas. This wildcat is on Lot 1, H.T.&B. Survey A-299, and will be drilled to about 8,500 ft.

O. W. Killam, Laredo, Tex., has contract for Charles E. Fraser, Inc., 1 A. M. Bruni. This wildcat is 330 ft. from the south and west lines of B.S. &F. Survey A-874, 7 miles southwest of Bruni, Tex. This is a 3,250-ft. test. Fraser took this deal over from J. B. Burton. The operator also has staked location for 2 A. M. Bruni about 3 miles southeast of the 1 Bruni location and may let contract for this well to the same drilling firm.

Morris-Hamilton Drilling Co., Houston, Tex., will drill Gulf Refining Co. 2 Vinton Petroleum Co., 330 ft. south and east of the NW cor. SE NW 34-10s-12w, in the Vinton field in Calcasieu Parish, Louisiana. Contractor recently drilled and completed 1 Vinton producer for the same company.

Stice Drilling Co., Beeville, Tex., will drill Hiawatha Oil & Gas Co. 15 M. M. Miller, 660 ft. from the north and east lines of Section 22, Ball Ranch subdivision, Santos Flores "Agua Poquita" grant, about ¾ mile northwest of the Longhorn field of Duval County, Texas.

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McNEELY MATERIALS CO.
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H. O. Drewett, John Brown, B. F. Spicer, driller, and Cliff Bowen, evening crew for Rex Drilling Co., working on Union Production Co. 1 Penrod-Jurden which has been completed as the second producer in the Holly-Ridge field, Tensas Parish, Louisiana. The well flowed 328 bbl. daily through 5/32-in. choke through perforations from 8,282 to 8,410 ft.

Drilling & Exploration Co., Los Angeles, Calif., has been awarded contract to drill Union Pacific Railroad Co. 222 fee at Wilmington, California.

O'Kane & Brain, Inc., Long Beach, Calif., drilling contractors, completed a wildcat in Colusa County, California, for General Petroleum Corp., opening a new commercial gas field.

Hiles Drilling Co., Long Beach, Calif., completed a new well for Long Beach Oil Development Co. in the Wilmington, California, field and immediately started work on another well for the same company.

J. W. Gorman, San Antonio, Tex., is the contractor on American Republics Corp. 1 Kreis, a wildcat 3½ miles east of the Kreis field in Duval County, Texas, Survey 228. Contractor is rigging up rotary.

Nicklos Drilling Co., Houston, Tex., is the contractor on Continental Oil Co. 4 Acadia Parish School Board, in 16-7s-1w, at North Richie in Acadia Parish, Louisiana. It is a proposed 8,600-ft. test.

Kern Drilling Co., Long Beach, Calif., has been given contracts to drill two wells in the Santa Maria Valley, California, for Brain & Kohler and W. R. Gerard and work will start as soon as crews are available.

O. W. Dyer, Houston, Tex., has contract for Atlantic Refining Co. 1 South Texas Development Co., a Wilcox wildcat on east flank of Conroe field of Montgomery County, Texas, on Security subdivision 4, Clark Beach Survey, Lot66. This is a 12,000-ft. test. Wet weather is delaying moving in the rig.

PIPE WIPERS

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Los Angeles Houston New York City

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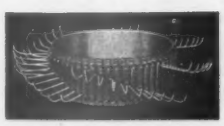

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Export Representative Val R Wittich 30 Rockefeller Plaza, New York City

This Jack Was Well Named!

No. 310A; 15-tons capacity; 22" high; 14" lift; 2¼" minimum toe lift.

Simplex No. 310A Emergency Jack is an all-around unit for oil field work. It's helped many a driller out of tight spots. It can safely lift, lower, push at any angle or support 15-tons. Operates vertically, horizontally and tilts on hinged base for angle jacking. Ask your field store.

Templeton, Kenly & Co. Chicago (44), Ill.

Better, Safer Oil Field Jacks Since 1899

Simplex LEVER · SCREW · HYDRAULIC Jacks

Pull Rod Repairs Are Easy! Simplex Pull Rod Repair Jacks made it a one man job—two types: for deep and shallow wells.

PERSONALS

Joins Pipe-Line Staff As Manager of Research

DR. R. H. WASER, manager of operations in the manufacturing department of Shell Oil Co., Inc., New York, is on a temporary assignment as manager of research for Shell Pipe Line Corp., with headquarters in Houston, Tex. It will be Doctor Waser's task to organize and coordinate a program of technical research and experimental engineering, with a view of advancing pipe-line technology. The project is being undertaken jointly with Shell Oil Co., Inc., and Shell Development Co.

Doctor Waser spent 6 years in Houston as manager of the Houston refinery from 1937 until last July, when he was transferred to New York. He assumes his temporary assignment to Shell Pipe Line after more than 25 years with the Shell group. He began as a research chemist for the B.P.M. in Amsterdam on May 1, 1917. Five years later he was moved to Shell Oil Co., Inc.—then Roxana Petroleum Co.—as superintendent of the cracking division of its Wood River, Ill., refinery. In 1923 he became the first manager of Shell's new refinery at Arkansas City, Kans., and on the completion of the East Chicago, Ind., refinery in 1926, he again was first manager. From 1934 to 1937 he was manager of the refinery at Wood River.

Albert T. Wisner, formerly assistant to the manager of the personnel and industrial relations department, Carter Oil Co. and Oklahoma Pipe Line Co., has completed a 7-week refresher course of the U.S. Maritime Commission at New London, Conn. He visited his family in Tulsa for a few days before going to sea this week as a third officer.

M. L. Freese, vice president of Bell Oil & Gas Co., Tulsa, and president of Associated Refineries, Inc., Duncan, Okla., suffered a fracture of the right ankle and severe bruises December 16, when he fell into an open hole at the Duncan, Okla., plant while making an inspection trip. He is in McBride Hospital, Oklahoma City.

William C. Chonette has been promoted from exploitation engineer to manager of Canadian operations, for Shell Oil Co., Inc., with headquarters in Los Angeles, Calif. Other Shell production department transfers in California include **Joseph L. Cruse,** drilling foreman, from Bakersfield to Ventura; **Lee S. Osborne,** exploitation engineer, from the San Joaquin division to the Los Angeles office; **George J. Wimer,** drilling foreman, from Oilfields to Bakersfield.

Maj. J. Earle Brown, Fort Worth, Tex., oil man, will be released from his assignment at the Pueblo, Colo., Army air base December 24 under the recent War Department order permitting return of officers to inactive duty. Major Brown, geologist and producer, who entered military service August 1, 1942, will resume his oil business.

R. G. Soper, Dallas, Tex., retired last week as vice president of Lone Star Gas Co. and general manager of its Dallas division after 35 years' service in the gas industry.

Frank Phillips, Bartlesville, Okla., chairman of Phillips Petroleum Co., has directed a grant of $75,000 to Barnes Hospital, St. Louis, Mo., from Frank Phillips Foundation, to be used in research into causes and cures of headaches. The work will center on a new disease, hyperostoses, characterized by a thickening of the interior of the skull.

A. L. Cantrell, formerly chief clerk in the Bayou Sale district office of Humble Oil & Refining Co. at Franklin, La., has been transferred to the Avery Island district, New Iberia, La. His place has been filled by **James V. Blacklock,** formerly chief clerk in the Potash district office, Pointe-a-la-Hache, La. Blacklock is succeeded by **Andrew L. Pate,** formerly chief clerk in the Livingston district office, Livingston, Tex. **C. B. Hays,** formerly Humble's chief clerk in the Flour Bluff district office, Corpus Christi, Tex., has been transferred to the Colorado district, Randado, Tex. His place has been taken by **Olin A. Griffin,** formerly in charge of the Randado office. **T. J. Whitehead,** who was assistant chief clerk in the London district office, Overton, Tex., has been promoted to chief clerk in the Greenville district, Commerce, Tex.

W. S. ZEHRUNG

W. S. Zehrung, president of the Pennzoil Co., Oil City, Pa., was host last week to three officers of the Army and Navy who inspected the 100-octane gasoline plant which Pennzoil is constructing. The officers were **Rear Adm. Gaylord Church** and **Comdr. F. H. Dechant,** of the Navy, and **Colonel Gesler,** Army engineer. Construction of the plant, which will operate entirely on Pennsylvania charging stock, is nearing completion.

Phillip H. Bohart, assistant to the vice president of Gulf Oil Corp. and Gulf Pipe Line Co., was chosen president of Tulsa Chamber of Commerce last week.

Dr. Carey Croneis, professor of geology at University of Chicago and known as an expert on practical oilfield geology, told Houston (Tex.) Geological Society last week, "In the last 2 hours Texas has produced as much oil as Germany and all her satellites will produce in the next 24."

L. G. Alexander has resigned as cracking-coil foreman at the Cleveland, Ohio, refinery of Standard Oil Co. of Ohio to become superintendent for Ashland Oil & Refining Co., Ashland, Ky. He received a traveling bag and an onyx desk set as parting gifts from Cleveland refinery associates.

R. E. Smith has purchased from **Claud B. Hamill** the latter's interest

in all the oil production of Hamill & Smith, Houston, Tex., partnership, for a cash consideration of $1,500,000. Drilling equipment was divided, and both men will continue as independent oil operators. Production includes 3,000 bbl. daily from wells in Louisiana and Texas.

Glenn Purcell, head of the gas department at the Wood River, Ill., refinery of Shell Oil Co., Inc., since 1941, has been promoted to section chief in the research and development department at the head office in New York. Purcell graduated in chemistry at University of Oklahoma in 1929 and joined Shell as a junior chemist at Wood River. From 1930 until 1941 he was analytical chemist, senior technologist, and technical assistant there.

C. P. PARSONS

C. P. Parsons, vice president of Halliburton Oil Well Cementing Co., Duncan, Okla., has been appointed assistant to **Frank A. Watts,** director of materials, Petroleum Administration for War. He is to report for duty in Washington, D. C., January 1.

R. A. Taylor, S. L. McClendon, V. R. Gurley, and **Floyd Billington,** of the light-oil department in the Ponca City, Okla., refinery of Cities Service Oil Co., have been transferred to the company's plant at Lake Charles, La. Others transferred from Ponca City to Lake Charles are **J. B. Wallace** and **William Burke,** pressure stills; **Joseph Van Dorsten,** lubricating-oil department; **J. S. Arnold,** power plant; **Davis C. Slover,** assistant resident chemist.

Lawrence L. Boyle has been promoted to head inspector at the Dominguez, California, refinery of Shell Oil Co., Inc., and **Foster W. Curtis** has been transferred from New York to engineer at the Wilmington, California, refinery.

Noah Andrews, president, Union Drilling & Producing Co.; **O. H. Kristofferson,** division geologist for Skelly Oil Co., and **William H. Strickler,** division manager for Sohio Oil Co., all of Mount Pleasant, were chosen directors of the Oil and Gas Association of Michigan at the recent annual meeting, to fill vacancies. The 11 other members of the board were reelected.

Dr. Gustav Egloff, director of research for Universal Oil Products Co., Chicago, and president of American Institute of Chemists, has accepted appointment to the committee on industrial plant opportunities of Illinois Postwar Planning Commission. The function of the committee, named by **Gov. Dwight H. Green,** is to study industrial plants of the state to determine the conversion requirements of all industries now engaged in war production and to survey potential industrial opportunities for the state.

Reid Brazell, vice president of Leonard Refineries, Inc., Alma, Mich., has been elected president and retains his position of general manager. **J. W. Leonard,** formerly president of company, has been elected chairman of the board. **L. R. Kamperman** was elected vice president in charge of sales.

D. W. Hovey and **G. L. Hovey,** Houston, Tex., oil men, have formed Hovey Petroleum Co., which will handle crude oil and refined products and also transport these materials by tank car and barge. D. W. Hovey, formerly vice president of Republic Oil Refining Co., was the first president of Gulf Coast Refiners Association.

Lt. R. C. Jordan, who was in the engineering department of United Gas Pipe Line Co., Shreveport, La., until he entered war service, is now stationed at Seattle, Wash., after oversea experience concerned principally with equipment for the control of antiaircraft guns and searchlights.

Gardiner Symonds, vice president of the Chicago Corp. and president of Tennessee Gas & Transmission Co., a subsidiary, was master of ceremonies at the annual game dinner held recently at Corpus Christi (Tex.) Country Club, with about 150 officials and department heads of Chicago Corp. attending. **Richard Wagner,** president, and **Charles F. Glore,** chairman of the executive committee, were among the guests.

Lloyd Hamilton, Standard Oil Co. of California geologist in charge of primary exploration in the Persian Gulf area, leading to discovery of production in Saudi Arabia several years ago, has been elected chairman of Bahrein Petroleum Co., Ltd., succeeding **James A. Moffett.**

Dr. J. David Love, formerly research geologist for Shell Oil Co., Inc., has been selected to head the staff of U.S.G.S. geologists engaged in basic geological research on problems related to oil accumulation in Wyoming. The Geological Survey office for this project is being established at Science Hall, University of Wyoming, Laramie.

Horace C. Davis resigned as geologist for Lone Star Steel Co. in Dangerfield, Tex., and has joined the geological staff of Texas Co., with headquarters in Wichita, Kans.

Now!

More than ever before you need valves that can "take it."

ORBIT VALVES

ORBIT WING VALVE

ORBIT WING VALVE

This valve is especially designed for Wing Service. Made in 2" size only in both flanged and screwed ends. Opening through valve is 1⅛". Seats of cast Stellite J Metal.

YOUR ORBIT VALVES

will last for the duration. Meanwhile, if you have any questions regarding their care or maintenance, write us.

OIL WELL IMPROVEMENTS CO.

Since 1912

TULSA, OKLAHOMA

Market Developments

Mid-Continent

FRESH evidence of the acute shortage of gasoline for civilian use was provided this week by major refiners in the Mid-Continent territory who were trying to find supplies which they needed to fill commitments. In responding to appeals from the Atlantic Coast some of them dug so deeply into stocks that now they are unable to fill orders of regular customers.

Mid-Continent refiners have received letters from the District 2 committee on supply and distribution urging them to ship more kerosene to the East. Also letters and telegrams are coming from East Coast refiners asking for help in meeting the serious shortage of kerosene in that region.

Heavy fuels were tight. The District 2 committee on supply and distribution is asking refiners to ship all the heavy diesel fuel they can spare to the West Coast for war use.

Light lubricating oils were untouched by the tightness which gripped the general market. December is traditionally a dull month for the lubes. One reason is that buyers in some states must pay a tax on inventories at the close of year. By postponing deliveries till after January 1 they are able to lessen their tax burden a little. Furthermore, the buying of winter lubricants virtually has been completed, and buyers have no wish to take on material which may not be disposed of before the demand for warm-weather lubricants sets in. Besides these seasonal considerations, however, there is the additional reason this year that many refiners have added to their facilities for making heavy lubricants in order to meet extraordinary demand.

East Coast

NEW YORK.—Statistics on inventories indicate that the East Coast supply situation continues to improve with prospects of any severe difficulties this winter becoming increasing remote. This is particularly true of domestic heating oil, stocks of which have improved about 45 per cent in the past 2 months. According to the last A.P.I. index on East Coast civilian stocks, distillate fuel inventories were 73 per cent of normal in contrast to 50.5 per cent 2 months ago. The combination of rationing and improved deliveries makes it virtually certain that difficulties similar to those encountered a year ago will be absent this year.

Improvement in the motor-gasoline position on the East Coast has enabled PAW to reduce certifications for District 1 by 7,000 bbl. per day. The District 1 allotment for the first quarter of 1944 has been placed at 372,000 bbl. per day in comparison with 379,000 bbl. daily for the final quarter this year.

Concern over the continued decline in kerosene stocks was relieved by a slight improvement in the second week of December. Stocks of kerosene are still below comfortable levels and the situation may become serious with a protracted cold spell. Growing concern is also expressed over residual fuel-oil stocks which continued to decline.

Gulf Coast

HOUSTON, Tex. — Coastal refinery operators this week were striving to meet instructions from Petroleum Administration for War and demand from East Coast customers for increased shipments of kerosene and residual fuel oil. The market remained firm for motor gasoline although emphasis is obviously centered on the more critical products.

Shipment of special products to California is becoming an increasingly important factor in Gulf Coast manufacturing operations. The tentative program calls for doubling current shipments to the Pacific Coast as rapidly as supply lines can be perfected. Tank cars are being diverted to the California route as rapidly as they can be spared from the East Coast run.

When regular deliveries are started through the 20-in. products line some of the current necessity for maintaining over-land shipments at a high level will be reduced, and the flexibility of transportation from the major centers of supply will be enhanced.

Indications are that additional juggling of crude-oil supplies will be necessary as more of the aviation-gasoline plants come on stream at Gulf Coast refineries. Last week, at Austin, Tex., the Railroad Commission served notice that it would expect purchasers in East Texas to adjust their acquisitions to make the maximum use of desirable crude rather than by attempting to satisfy the requirements of each new plant by increasing allowables.

Demand for crude oils particularly attractive for manufacture of lubricating oil and heavy fuels is declining slightly.

Pacific Coast

LOS ANGELES, Calif.—A further tightening in California gasoline sales was manifested this week when many service stations were given arbitrary allotments by supplying companies. When the daily allotment has been sold, usually by noon time, the station is either closed for the day or open only for grease jobs. Some service stations restricted sales to 3 gal., reflecting a growing shortage that will become acute early in 1944 when stocks will be down to minimum economic working limits. Some stations are experiencing difficulty in restricting sales because the new supplemental coupons of OPA call for 5 gal.

One major marketer reports that tank trucks were lined up 1 day this week for 5 hours waiting to take deliveries of gasoline at the refinery.

The current shortage and the serious crisis which will be reached by March or April of next year clearly indicate why independent refiners and marketers have reduced sales to a minimum for the past several months.

Tank-car shipments from Texas to California are scheduled to be doubled early in the new year. Cars frozen for service in District 1 are being released and some will enter the Texas-California run. This interstate movement is expected to reach 80,000 to 90,000 bbl. daily early in 1944.

A.P.I. REFINERY REPORT

Week ended December 11, 1943

(Figures in thousands of barrels)

Appalachian	136	2,736	358	1,024
Ind., Ill., Ky.	748	14,060	2,750	6,381
Okla., Kan., Mo.	335	6,770	1,028	2,304
Censored area*	2,071	32,739	16,992	23,392
Rockies	94	1,317	725	425
California	760	14,315	37,862	11,984
Total 12-11-43	4,144	71,937	59,715†	45,510
Total 12- 4-43	4,331	71,040	61,420†	45,107†
Total 12-12-42	3,717	74,093	75,287	48,749

*Reports combined on East Coast, Texas Gulf Coast, Louisiana-Arkansas and Inland Texas at request of PAW.

†Revised to eliminate duplication in censored area.

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended:	Bbl. of crude*
December 11, 1943	240,148,000
December 4, 1943	241,165,000
December 12, 1942	231,896,000

*Excludes unrefinable California stocks.

Refinery Prices

(Prices as of December 21, 1943)

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

REFINERY GASOLINE

Octane (A.S.T.M.):	80†	72-74	68-70	63-66
Mid-Continent*	‡6.00-6.25	5.750-6.000	.....	5.625
Gulf Coast	6.00-6.50	§5.750-6.250	§5.750-6.250	§5.250-5.750
Northeast Coast	9.80	9.2	9.2	....
California	.....	6.255-6.500	5.750-6.125	5.125-5.500

*Basis Group 3. †1939 C.F.R. (research method). ‡Inland Texas and adjoining counties in Arkansas and North Louisiana. §Unleaded.

KEROSENE AND NO. 1 FUEL OIL

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*	.....	.....	4.500	4.125-4.375	.....
North Louisiana*	.....	.....	.....	4.125-4.375	.....
Pennsylvania	6.250-6.625	6.125-6.250	.....	.....	.....
California	.....	.....	.....	4.500-5.500	4.250
Northeast Coast	.....	.....	.....	6.80	.....
Gulf Coast	.....	.....	.....	4.125	.....

*Reflecting OPA ceilings, depending on destination of shipments.

TRACTOR, DIESEL, AND BUNKER FUEL OIL

Specifications	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Residual Bunker C
Mid-Continent*	4.125	.....	3.875-4.000	4.125-4.250	.....	$0.80-1.27
California	.....	2.750-4.000	.....	.....	‡1.35-1.45	1.10-1.15
Gulf Coast	.....	.....	4.000	4.125	1.45	0.85-1.27
Northeast Coast	.....	.....	.....	6.800	2.780	1.65-2.07
North Louisiana	.....	.....	.....	.....	.....	0.80-1.27

*Basis Oklahoma Group 3. †Gravity range. ‡Pacific Specification 200.

FURNACE OIL, GAS OIL, FUEL OIL

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.500-3.625	3.375-3.500	$0.85	$0.80
Pennsylvania (West)	5.875-6.125	5.875-6.000	†5.250-5.500	.....
Northeast Coast	6.7	6.7	1.95	1.65
California	5.5	5.5	‡1.10-1.25	§1.10-1.15
Gulf Coast	3.750-3.875	.....	1.35	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel. ‡Pacific Specification 300. §Pacific Specification 400.

NATURAL GASOLINE

Grades:	26-70	18-55
Oklahoma (Group 3)	4.750	5.700
North Texas	4.375	5.250
North Louisiana	4.375	5.250
California	4.875	5.500

LUBRICATING OILS

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25	....	27.00
150-160 D, 0-10	....	23.00
120-125 D, 0-10	....	22.00
Steam refined:		
600 dark green (untreated)	....	9.00
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash)		
10 pour point	....	30.50
15 pour point	....	29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50
Neutral Oils		
Vis. at 100° F. (except Pennsylvania and color N.G.A.)		
OKLAHOMA (Group 3)—		
0-10 pour point:		
200-3	....	15.00
300-3	....	18.00
500-3	....	19.50
600-3	....	20.00
Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.		
CALIFORNIA—		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Neutral Oils		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point	....	37.50
10 pour point	....	36.50
15 pour point	....	35.50
25 pour point	....	30.00
200 vis. at 70° F., 3 color:		
Zero pour point	....	39.50
10 pour point	....	38.50
15 pour point	....	37.50
25 pour point	....	32.00

WAX

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.s. scale	4.250
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250
NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	5.850
133-135 (A.m.p.) wax	6.150
Crude scale:	
124-126 (A.m.p.) w.s.	4.250
124-126 (A.m.p.) y.s.	4.250

TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	15.95	5.50	10.50
Boston, Mass.	14.90	4.50	10.10
Burlington, Vt.	16.90	5.50	10.20
Buffalo, N. Y.	16.20	5.50	10.90
Dover, Del.	16.70	5.50	12.30
Hartford, Conn.	15.60	4.50	10.00
Manchester, N. H.	17.30	5.50	12.10
Newark, N. J.	15.20	4.50	10.00
New York, N. Y.	16.10	5.50	10.10
Philadelphia, Pa.	16.20	5.50	11.90
Pittsburgh, Pa.	16.70	5.50	12.30
Portland, Me.	16.30	5.50	10.20
Providence, R. I.	15.00	4.50	9.90
Washington, D. C.	15.20	4.50	11.30
Average 14 cities	16.02	5.14	10.85

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	14.10	4.50	10.60
Cleveland	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	10.10
Detroit, Mich.	14.40	4.50	10.00
Fargo, N. D.	16.90	5.50	11.60
Huron, S. D.	16.30	5.50	11.00
Indianapolis, Ind.	15.60	5.50	10.10
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.80
Minneapolis, Minn.	15.90	5.50	10.60
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	13.30	4.50	8.70
Average 14 cities	17.46	5.57	9.84

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	18.90	7.50	*11.50
Birmingham, Ala.	18.50	8.50	9.00
Charleston, S. C.	18.95	7.50	...
Charleston, W. Va.	19.25	6.50	13.30
Charlotte, N. C.	20.10	7.50	11.30
Jacksonville, Fla.	18.90	8.50	9.50
Jackson, Miss.	17.50	7.50	†9.00
Louisville, Ky.	16.50	6.50	8.50
Memphis, Tenn.	17.90	8.50	10.50
New Orleans, La.	17.75	8.50	10.00
Norfolk, Va.	17.45	6.50	12.30
Average 11 cities	18.34	7.50	10.50

*Includes 1-cent state tax.
†Includes ½-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

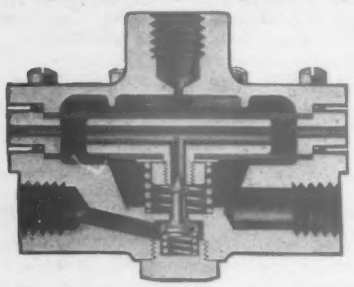
(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.80
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.80
Average 3 cities	16.17	5.83	13.03
Average 50 cities	16.59	5.96	10.92

Equipment Progress

Faster Operation for Pilot-Operated Diaphragm Valves

The new Fisher air relay—available in two types—assures better and faster process control by speeding up the operation of pilot-operated dia-



phragm valves, and by eliminating lag in long control lines. It operates with an independent air supply.

Type 2601 has a loading ratio of 3 to 1, providing 3 lb. output pressure for each pound of air pressure variation on the relay diaphragm.

Type 2601A has a loading ratio of 1 to 1 for each pound pressure change on the relay diaphragm, 1 lb. output pressure change will be obtained.

Specifications are: ¼-in. cast bronze body with single-seated double-acting inner valve construction. Seats are cut in the body and in the upper diaphragm follower. Diaphragm housing, spacer piece and diaphragm head are bronze.

Speed of operation: With a supply pressure to the inlet side of 20 lb., a main valve diaphragm of 107 sq. in. area, and a 2-in. valve stroke, the time required for stroking the valve in either direction would be 10 seconds.

Complete details of this new Fisher air relay can be obtained from Fisher Governor Co., Fisher Building, Marshalltown, Iowa.

National Supply Expands Distribution

National Supply Co. announces the appointment of Houston Oil Field Material Co., Inc., of Houston, Tex., as distributor of National and Ideal oil-field machinery and equipment. It has been a distributor of Spang pipe, another National product, since 1932.

Houston Oil Field Material Co., Inc., was organized in 1928 by virtually the present management for the purpose of distributing oil-field specialties and to operate a cutting and fishing-tool service. In the past 15 years it has expanded to a full-line supply company catering to all the needs of the oil industry. The cutting and fishing-tool service and its mud and chemical sales and service departments occupy a 5-acre site in Houston.

The company operates 40 contact points and serves the Gulf Coast and other sections of the Mid-Continent area from Mississippi to the Mexican border. For the past 18 months the company has been actively engaged in war work, having prime contracts to build airplane landing-gear struts for the U. S. Army Air Forces.

Bethlehem Opens Stores in North Central Texas

Bethlehem Supply Co. announces that it has opened two new stores in the North Central Texas district. They are: Graham, Tex., P. J. Ryan, store manager and field representative, and Bowie, Tex., H. F. Wright, store manager and field representative.

These new stores are under the direct supervision of M. C. Niblack, district manager, with headquarters at Wichita Falls, Tex.

Maritime Commission's Gold Star to Wm. Powell Co.

James Coombe, president of Wm. Powell Co., announces he has been notified by Admiral Vickery, chairman of the U. S. Maritime Commission, that the company has been awarded a gold star to be added to the Maritime "M" Pennant which was presented last May. This is in accordance with the commission's practice of granting an additional gold star every 6 months to companies whose production performance merits the award. In addition to its gold-starred Maritime "M" Pennant the Powell company has also won the Victory Fleet Flag and the Army-Navy "E."

Valve Situation Eases

According to the Merco Nordstrom Valve Co., available manufacturing facilities not suitable for the production of critical steel valves are being devoted to semisteel valves. This will permit immediate stock deliveries of certain sizes and figure numbers, thus relieving an aggravating condition in many industries.

In the near future orders will be largely completed for top-priority Nordstrom cast-steel valves needed in synthetic-rubber plants and high-octane refineries which in turn gives excellent prospect of delivery within 90 days of steel valves for other uses.

Excel-So Water Separators Establish New Records

Excel-So separators, manufactured by Warner-Lewis Co., Washington, D. C., are guaranteed to deliver gasoline containing not more than 1/500 of 1 per cent of undissolved water, and during recent tests by government testing engineers, Excel-So outperformed all other types of separators by delivering gasoline 99.999 per cent water free.

The Excel-So separator combines the use of a coalescing medium, together with a low-velocity settling chamber, which is the open portion of the tank downstream from the medium section.

When gasoline first enters the separator, it passes through the contact section where the special coalescing medium is employed. This medium has the peculiar ability to break down the severest gasoline-water emulsion that may be developed either by pipeline turbulence or by the action of pumps.

As the water leaves the medium section where the emulsion has been joined and rejoined into larger globules, the settling chamber affords a space where the water has an opportunity to settle to the bottom and find its way to the water accumulator, where it is drawn off.

The water accumulator is provided with an automatic water-evacuator valve, where it is automatically eject-

ed from the system in quantities up to 2 per cent of the total volume of gasoline handled.

Should huge slugs of water occur, an electronic safety control switch then goes into action and shuts down the pumping system, so that no further gasoline can be delivered to the airplane or fueling truck.

Among Equipment Men

Knowles Succeeds Crawford as President of Parkersburg Rig & Reel

At a meeting of the board of directors held November 5, John M. Crawford resigned as president of

A. S. KNOWLES

J. M. CRAWFORD

Parkersburg Rig & Reel Co. and A. Sidney Knowles was elected as his successor.

Crawford, founder of the company in 1897, retires after 47 years of service. In this time, he was largely responsible for raising Parkersburg to the front rank of oil-field equipment manufacturers and extending its activities into every oil-producing country in the world.

While relinquishing the presidency, Crawford is retaining his position as chairman of the board of directors.

Knowles is already well known to a wide section of the oil industry and has been active in the operation of Parkersburg Rig & Reel Co. since becoming a member of the board of directors in 1936. He served in this capacity until October 1942, at which time he was elected executive vice president.

Wallace Resigns From Link-Belt Co.

Fred (Pete) Wallace has recently resigned from Link-Belt Co., after 15 years of service in the oil industry, the latter part of which period he headed the company's oil field sales organization. He has made two tours of South American fields for Link-Belt and is a member of the Houston chapter of Nomads. He now resides in Houston, Tex.

Gustin-Bacon Announces Personnel Changes

Effective December 1, Ralph C. Harden, vice president, assumed direction of all sales activities of Gustin - Bacon Manufacturing Co., Kansas City, Mo., with headquarters at Kansas City and New York City. J. F. Stephens, vice president, will be in charge of product development and research. J. O. Brelsford, general manager of production, will be in charge of manufacturing.

Continental Acquires More Emsco Interest

LOS ANGELES, Calif.—In a deal representing a cash consideration in excess of $1,000,000, Continental Supply Co., Dallas, Tex., a Youngstown Sheet & Tube Co. subsidiary, has purchased from Republic Supply Co. of California 88,800 shares of Emsco Derrick & Equipment Co. stock at a price of $11.50 per share, it was disclosed here last week.

According to J. A. Crawford, president of Youngstown Steel Products Co., another subsidiary of Youngstown Sheet & Tube, which represents the parent concern on the Pacific Coast, the transaction involved all the Emsco stock held by Republic Supply. It brings the Continental Supply Co.'s holdings in Emsco to approximately 80 per cent of the outstanding securities.

P. M. Pike, who represented the Republic Supply interest through membership on the Emsco board, has resigned his directorship.

Homco Opens Jackson, Miss., Branch

Houston Oil Field Material Co., Inc., has opened a branch store at 1504 N. Mill St., Jackson, Miss. Joe C. Seale is store manager, having been

T. F. BURKE

J. C. SEALE

transferred from Victoria, Tex. Tom F. Burke is division manager, with headquarters in New Oreans, La.

The company has also recently opened new branches at Raymondville, Willacy County, Texas, and Kenedy, Karnes County, Texas. Raymondville will service the Willamar field and adjacent developments, and Kenedy the Karnes-Goliad-Bee County fields.

Complete stocks of oil well supplies, as well as drilling muds and chemicals, are carried, and each store may be contacted for Homco cutting and fishing-tool service.

Wickwire Spencer Names Konselman Advertising Manager

C. B. KONSELMAN

Charles B. Konselman has been appointed advertising manager of Wickwire Spencer Steel Co., to succeed George L. Randall, recently commissioned a lieutenant (j.g.) in the U.S.N.R. and now stationed temporarily at the Naval Air School, Quonset Point, R. I.

Prior to joining Wickwire Spencer and for the past 6 years, Konselman was associated with Royal Typewriter Co., the last 3 years of which as sales promotion manager. He will be located at the company's home office, 500 Fifth Avenue, New York 18, N. Y.

Schlumberger Appoints Gulf Coast Division Manager

R. R. RIEKE

Schlumberger Well Surveying Corp. announces the promotion of R. R. Rieke from district manager in Wharton to division manager of the Texas Gulf Coast division in Houston. He will replace George H. Murray, who is on sick leave.

Curtis Monsanto Vice President

Francis J. Curtis has been elected a vice president of Monsanto Chemical Co., according to announcement by Charles Belknap, president.

In his new capacity, Curtis will be in charge of Monsanto's long-range program of development here and abroad, including general research and general sales development.

E. L. Decker Makes Mid-Continent Trip

E. L. Decker, vice president of the Martin-Decker Corp., Long Beach, Calif., has just completed a sales trip in the interests of his company. Kansas, Oklahoma, and Texas were visited and considerable time was spent in West Texas.

Classified Advertising

The Market Place for the Oil Industry

MAGNAFLUX INSPECTION
One day service
REGAN FLYING SERVICE
Shawnee, Oklahoma

UNDISPLAYED RATE

8 CENTS A WORD, minimum charge $2 per insertion.

SITUATIONS WANTED, 4 cents a word, minimum charge $1.

BOX NUMBERS, count 8 words when replies are to be sent to our Tulsa Office.

10% DISCOUNT if 3 insertions are ordered at one time, with check accompanying order.

All classified advertising payable in advance.

DISPLAYED—PER INCH

Classified display advertising set in single or double column style:

1 inch ..	1 time	$7.00
1 inch ..	13 times	6.50
1 inch	26 times ..	6.00
1 inch	39 times	5.50
1 inch	52 times	5.00

Rates are governed by total space used within 12 months from date of first insertion. Credits are allowed when lower rates are earned.

FORMS CLOSE 9:00 A.M. MONDAY
Published Each Thursday

Due to the pressure of business and the shortage of paper, necessitating an earlier estimate of space needed, Classified Advertising forms will close each week at 9 a.m. MONDAY, effective January 1, 1944. Any advertisement received after that hour will be held over for the next issue.

PATENT ATTORNEYS

PATENTS, Trade-Marks, Booklet, "General Information Concerning Inventions and Patents" and "Free Schedule" sent without obligation. Established 1915. Lancaster, Allwine & Rommel, Suite 418, Bowen Bldg., Washington, D. C.

FINANCING

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should write to AMSTER LEONARD, Fox Theater Bldg., Detroit 1, Mich.

"Analysis of Current American Financing Through Stock Sales." Photostatic copy $5 A research paper listing 79 underwriters of $42,560,000 in recent months and 25 most active royalty dealers of 1943. JOHN MORRIS, Box 5411, Philadelphia, Pa.

FOR SALE—MAPS

FOR SALE—MAPS

685 oil fields in South Texas and Louisiana now mapped and maintained daily; show all intimate details of ownership and development. 2 ft. square. Price $3.50 for each field Also County and Base Maps.

ZINGERY MAP CO. Houston, Tex.

LEASES AND DRILLING BLOCK

WANTED: Offset or potential producing leases or shallow production, (2,000 feet or less in Midcontinent or California fields. Must have merit, be legitimate, and worth the money. Write P.O. Box 652, Russell, Kansas.

LEASES AND DRILLING BLOCK

NEW MEXICO
State Oil and Gas Leases

TWO DEEP TESTS UNDER WAY—one a 7,500 ft. test; the other a 6,000 ft. test, 40 acres and multiples thereof for sale in the HoT SPoT. Write for information. HARRY S. WRIGHT, New Mexico State Lessee, Farmington, New Mexico.

FOR SALE: Oil and gas leases and producing leases with offsets to drill. All in shallow territory. W. P. Harley, Bowling Green, Ky.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING
Texas, New Mexico, Oklahoma
Louisiana and Illinois.
30 Years' Experience
Inquiries Invited.

B. D. BUCKLEY
60 Broadway Drive, Clayton
St. Louis, Mo.

EQUIPMENT FOR SALE

Refining Towers—Special Offering—Located Tulsa, Oklahoma

1 4' 3" x 40' x $\frac{1}{4}$" type A-51-141 Burrell-Mase absorber, serial No. 153-75. Welded throughout; 14 bubble trays with 6" cleanout flanges for each tray. 2-18" manholes in shell. 80 lb. working pressure.
1 6' x 43' including 3' skirt x $\frac{1}{4}$" cracking coil separator. Vessel is riveted, butt strapped and welded. 1-16" manhole in top head and 1-16" manhole in bottom of shell.
1 6' x 21' including 2' 9" skirt x $\frac{3}{8}$" Southwestern still. Vessel riveted and butt strapped. 1-16" manhole in top head, 1-16" manhole in bottom of shell.
1 30" x 30' including 2' skirt x $\frac{1}{4}$" welded tower. 10-6" couplings welded in shell
1 3' x 33' including 2' skirt x $\frac{1}{4}$" welded tower. 12 trays.
1 3' 6" x 15' including 2' skirt x $\frac{1}{4}$" welded tower. 4 trays.
1 5' x 28' including 34" skirt x $\frac{1}{4}$" riveted tower. 18" manholes in top and bottom.
1 7' x 22' x $\frac{3}{4}$" shell, $\frac{7}{8}$" heads riveted, butt strapped and welded tower. 21' manway in top, 30" manway in bottom. Seven 20" x 25" manways in shell.
1 5' x 28' x $\frac{3}{8}$" welded flash tower. 2-18" manholes in shell. 4" flanged outlet in top. 3" screwed outlet in bottom.
1 22" x 11' 8" x $\frac{3}{8}$" welded surge drum. 2-2" couplings and 1-1" coupling welded in shell.
1 10' x 22' 4" including 8' skirt x $\frac{3}{8}$" riveted agitator. Steel walkway 2' 10" wide with $\frac{1}{4}$" floor plate. 2 holes in walkways; one 24" x 28" and one 18" x 20". Capacity of agitator 9,080 gallons.
1 3' 6" x 20' 6" including 3' 6" skirt x $\frac{1}{4}$" welded flash tower. 3" outlet in bottom, 4" outlet in top. 1-4" and 2-3" outlets in shell. 2-18" manways in shell.
1 3' x 14' x $\frac{1}{2}$" riveted shell. 18" manway in one end 6" coupling in shell.
1 72" x 50' 2" x $\frac{1}{4}$" Tulsa type fractional absorption tower. 1-12" flanged nozzle in top head, 2-12" flanged nozzles in shell. Also 2-4" flanged nozzles in shell.
1 5' x 44' x $\frac{1}{2}$" riveted tower.
1 40" x 18' x $\frac{1}{4}$" Braun still. Vessel welded throughout. Working pressure 30 lbs.
1 6' x 42' x $\frac{1}{2}$" flash tower, 3' skirt, equipped with 2" coils.
2 7' x 35' x $\frac{1}{2}$" gray filter towers, 16' skirt, riveted construction.
3 60" OD x 44' long x 4" thick Krupp manufactured cross reaction chambers.

Located Stark (near Detroit) Michigan

1 Vis-Breaker Tower, 4' x 64' x $\frac{3}{8}$" thickness, welded construction. Four steel perforated pans in lower section of vessel, 22 steel bubble trays with 38 caps per tray, 36 downcomers.
1 Vacuum Tower, 5' and 4' x 36' x $\frac{1}{4}$" shell thickness x $\frac{1}{4}$" head thickness. All welded construction, fabricated by the Muskogen Boiler Works. There are 4 trays in the upper portion of the vessel and two trays in the lower portion, there are approximately 70 caps per tray. The top section of the tower is 5' in diameter for 21' tapering 2' to a 13' section 4' in diameter.
1 Vis-Breaker Accumulator, 3' 6" x 8' x $\frac{1}{4}$" shell and head thickness, top head dished and bottom head cone. Riveted and welded construction.

Refinery Equipment, Inc.

W. C. Berry
Union Ave. at 41st Street

Robt. W. Duden
Tulsa, Oklahoma

WANTED

WANTED: Distributors for Oklahoma and Mississippi to handle a general line of drilling muds. Drilling Mud Corp., 315 Thompson Bldg., Tulsa, Oklahoma.

PURCHASER will buy OIL PRODUCING CO. from OWNERS able to deliver all of stock or interest . . . and priced at $100,000.00 or more. Box B-922, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED to contact party interested in oil leases, with some geological ability to look over oil and gas seepages in B. C. Canada. Putting over a lease on large structure. R. M. Thomason, Deaver, Wyoming.

WANTED TO BUY FOR CASH: Oil and gas production—will purchase wells to salvage. Rogers & Wright, phone 30-171, 715 Peoples Bldg., Charleston, W. Va.

LEGAL BLANKS

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

EQUIPMENT FOR SALE

FOR SALE: Two eighty-four foot standard Emsco angle-iron drilling derricks with relegs. Will take shear poles in trade Petroleum Products Refining & Producing Co., Prewitt, New Mexico.